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ARMANDO BILARDO & SAVERIO ROCCHI

A REVISION OF THE AFRICAN SPECIES OF THE GENUS *NEPTOSTERNUS* SHARP, 1882 (COLEOPTERA DYTISCIDAE)

MILANO NOVEMBRE 2012

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Armando Bilardo & Saverio Rocchi

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Novembre 2012

Memorie della Società Italiana di Scienze Naturali
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In copertina: *Neptosternus longitarsis* n. sp. Line drawing by C. Pesarini.

Registrato al Tribunale di Milano al n. 6694
Direttore responsabile : Anna Alessandrello

Grafica editoriale: Michela Mura

Stampa: Litografia Solari, Peschiera Borromeo - Novembre 2012

ISSN 0376-2726

Armando Bilardo & Saverio Rocchi

A revision of the African species of the genus *Neptosternus* Sharp, 1882 (Coleoptera Dytiscidae)

Abstract - The species of the genus *Neptosternus* in Africa are revised and the taxonomic characters discussed. The species of this genus are very difficult to identify; this paper is an attempt to provide a suitable method of identification based above all on a rich iconography. Four new species are described: *bartolozzii*, *komareki*, *longitarsis* and *maliensis*. The lectotypes of the following species are designated: *africanus* Peschet, 1916, *alluaudi* Régimbart, 1903, *oberthueri* Régimbart, 1903, *oblongus* Régimbart, 1895, *ornatus* Sharp, 1882, *pumicatus* Guignot, 1949 and *rotroui* (Pic, 1924). The following new synonimies are proposed: *meridianus* Omer-Cooper, 1970, *nigeriensis* Omer-Cooper, 1970, *rotroui* (Pic, 1924) and *tropicus* Guignot, 1954 = *ornatus* Sharp, 1882; *psephotus* Guignot, 1955 = *sombuicus* Guignot, 1954; *silvester* Guignot, 1960 = *alluaudi* Régimbart, 1903. *N. bilardoi* Pederzani & Rocchi, 2008 is downgraded to subspecies of *oberthueri* Régimbart, 1903. The neotytpe is designated for *N. nuperus* Guignot, 1954.

Key words: Dytiscidae, *Neptosternus*, Africa, review, new species.

Riassunto - Revisione delle specie africane del genere *Neptosternus* Sharp, 1882 (Coleoptera Dytiscidae).

Viene riesaminata la tassonomia del genere *Neptosternus* Sharp, 1882 in Africa; si tratta di un genere molto difficile, dove il riconoscimento delle specie risulta assai problematico; il lavoro è pertanto corredato da una ricca iconografia, quale supporto fondamentale per la determinazione dei vari taxa. Vengono descritte 4 nuove specie: *bartolozzii*, *komareki*, *longitarsis* e *maliensis*. Vengono designati i lectotipi delle seguenti specie (alcune di queste anche con i relativi paralectotipi): *africanus* Peschet, 1916, *alluaudi* Régimbart, 1903, *oberthueri* Régimbart, 1903, *oblongus* Régimbart, 1895, *ornatus* Sharp, 1882, *pumicatus* Guignot, 1949 e *rotroui* (Pic, 1924). Vengono proposte le seguenti nuove sinonimie: *meridianus* Omer-Cooper, 1970, *nigeriensis* Omer-Cooper, 1970, *rotroui* (Pic, 1924) e *tropicus* Guignot, 1954 = *ornatus* Sharp, 1882; *psephotus* Guignot, 1955 = *sombuicus* Guignot, 1954; *silvester* Guignot, 1960 = *alluaudi* Régimbart, 1903. Viene modificato il rango di *bilardoi* Pederzani & Rocchi, 2008 da specie a sottospecie di *oberthueri* Régimbart, 1903. Si designa il neotipo di *N. nuperus* Guignot, 1954.

Parole chiave: Dytiscidae, *Neptosternus*, Africa, revisione, nuove specie.

INTRODUCTION

The genus *Neptosternus* Sharp, 1882 occurs in Africa and South-East Asia. According to the catalogue Nilsson (2001) the genus comprises 22 African and 70 Oriental species. The type species of the genus is *Neptosternus ornatus* Sharp, 1882 described from Madagascar and Zanzibar (Tanzania).

The Oriental species were revised by Hendrich & Balke (1997) and subsequently updated with descriptions of new species by Balke *et al.* (1997), Balke & Hendrich (1998 and 2001), Hendrich & Balke (1999, 2000a and 2000b); the Chinese species were recently revised by Zhao *et al.* (2012), whereas in recent years no modern revision was published of the African species. After the classic revision by Guignot (1959a) only one contribution to the study of African *Neptosternus* was published by Omer-Cooper (1970) with the examination of some types, but the number of studied specimens was not so high as to show the range of the intraspecific variability. Nevertheless Omer-Cooper (loc. cit.) had the merit of the first attempt to solve identification problems by introducing new taxonomic characters. Unfortunately Omer-Cooper's study was limited to continental species, with the exclusion of Madagascan ones, and the study was based on material from too few localities and low number of specimens, that caused the establishment of some new species on specimens being within the range of variability of one species. An example is *N. ornatus* Sharp, 1882 a very variable species widespread in Madagascar, western, central and southern Africa: its wide area of distribution probably caused the formation of morpho-clines and locally variable races that were wrongly described as different species; for that reason some synonimies proposed here below principally concern that variable species.

In our foregoing papers (Bilardo & Pederzani, 1978; Bilardo, 1982; Pederzani & Rocchi, 1982; Bilardo & Rocchi, 1990 and 1999) the records of *Neptosternus* were usually reported only in part, due to the difficulty in reaching reliable identifications; however in spite of taxonomic difficulties, Bilardo & Rocchi (2010) described four Afrotropical new species clearly distinguishable by peculiar characters and two possibly new species briefly described but not denominate, being in need of further study. Pederzani & Rocchi (2008) described another new species from Madagascar, whose status will be discussed here below. The above-mentioned African new taxa were the first published after Omer-Cooper (1970), that is with a gap of some 40 years.

For that reasons we felt the need to better investigate the African species of this difficult genus. Our first target was the study of type material of all taxa described up to date, that proved to be an arduous task, but after all we succeeded in looking over all necessary type material, except for two species (*N. hedychrous* Guignot, 1955 and *N. nuperus* Guignot, 1954, the latter because the paratype obtained for study is in fact a *N. compsus* Guignot, 1953).

The great difficulty in the identification of the species was always emphasized by authors. Omer-Cooper (1970), Bilardo & Rocchi (1990), Pederzani & Rocchi (2008) and Bilardo & Rocchi (2010) agreed upon the unsatisfactory taxonomic value of the microsculpture; quoting Omer-Cooper (loc. cit.) the microsculpture is "represented by a microreticulation and micropunctuation ("alutacé" Guignot). This can only be seen under a high magnification, and with slight changes in the direction of light and in the focus its appearance may change from one to the other".

The structure of aedeagus is poorly differentiated in *Neptosternus* and somewhat asymmetric, so its median lobe appears of different shape depending on the orientation and the angle formed with the optical axis of microscope. Female genitalia are almost alike in all species; in our opinion they don't show peculiarities, so we thought it best not to thoroughly investigate their structures.

Prosternum is obviously keeled as a rule (Guignot, 1959a; Omer-Cooper, 1970); in some species of group B (see later the subdivision into groups) it is keeled only at base and transversely convex, not keeled, behind; in *N. compsus* Guignot, 1953 it is not keeled in the holotype but shows traces of a keel in other specimens; therefore its feature is unreliable as a taxonomic character, and is just mentioned in a few cases and in the descriptions of the new species. The apophysis of prosternum has a median spine tapering to a long, fine point, and lateral spines clearly shorter than the median (Guignot loc. cit.); the shape of this trident is somewhat variable also in individuals of the same species, so we cannot rely on it in the identification of species.

The colour of head and its appendages, underside and legs usually reproduces the colour of elytral marks with paler or darker gradations of colour depending on the level of chitinization and also on the age of material (old specimens are darker as a rule); such colour has no taxonomic value, with some exceptions: *N. nuperus* Guignot, 1954 represents an exception because its brown underside is obviously darker than elytral marks. *N. batekensis* Bilardo & Rocchi, 2010, *susinii* Bilardo & Rocchi, 2010 and darker specimens of *N. oberthueri bilardoi* Pederzani & Rocchi, 2008 have blackish underside, and are the only African taxa with completely black head.

Also the testaceous markings on elytra, taken alone, are often misleading as a taxonomic character, because the shape and size of the marks show considerable intraspecific variability. In conclusion, all diagnostic characters taken one by one are inadequate to provide the usual diagnosis and descriptions of the species; in fact the statements and sentences used in the descriptions should be too repetitive and of little help in the identification. In our opinion a key to species is unattainable, since it cannot be based on constant and well definable characters and in some cases it may be misleading.

Nevertheless, as first noted by Omer-Cooper (loc. cit.), the basic schemes of arrangement of the elytral marks in *Neptosternus* appear to fall into groups that represent a suitable approach to the study. Therefore the only method we could work out to identify species is to roughly subdivide them into groups, according to the arrangement of elytral marks, and show for each species, beside basic information and a general description, a rich set of coloured pictures of habitus, penis and parameres. One or more photos of habitus describe the shape of the beetle and above all the colour pattern of pronotum and elytra, with the principal intraspecific variations. The first approach by photos of habitus and genitalia is integrated by additional information such as size, shape, and in some cases also length of mesotarsus (measured without claws): the latter character (Fig. 1), introduced by Bilardo & Rocchi (2010), proved to be valid in taxonomy; in fact the conspicuous length of mesotarsus is a peculiarity of the genus *Neptosternus* and is distinctive of some species, including one of the new species described below.

The genus *Neptosternus* in Africa is distinctly splitted into Afrotropical and Madagascan (endemic) species, with the only exception of *N. ornatus* Sharp, 1882 that occurs both in Madagascar and western, central and southern Africa and represents the most widespread species of the genus.

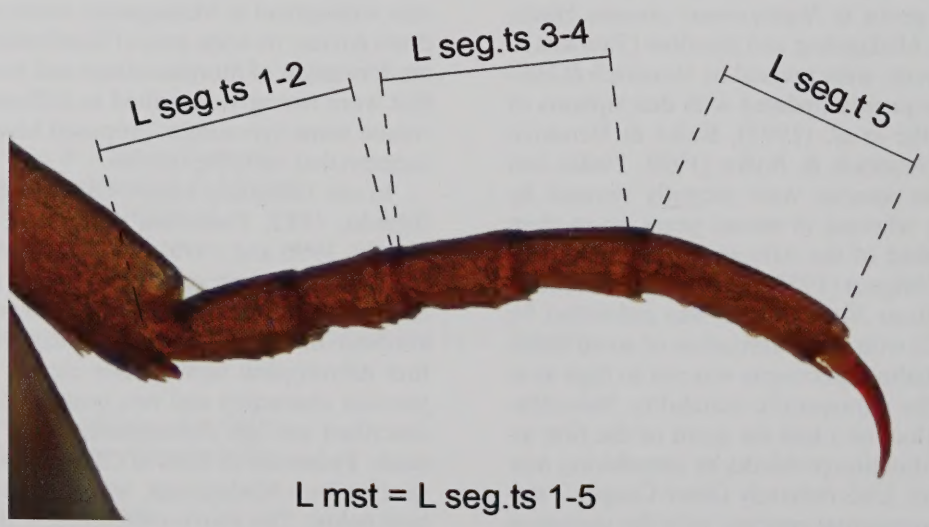


Fig. 1 - *N. fasciatus* Omer-Cooper, 1970, Gabon, Réserve Lopé Okanda. Right mesotarsus / mesotarso destro. Lmst: = total length of mesotarsomeres without claws / lunghezza totale dei mesotarsomeri senza unghie.

MATERIAL AND METHODS

This revision is based on the study of specimens of the type material of all species, as they were available to authors, and all material deposited in authors' collections and received for identification.

Photos were taken by a digital camera CANON EOS 40 D coupled with a binocular microscope LEICA MZ 12.5, and elaborated at PC by Helicon Focus and Adobe Photoshop software. Measures were taken by a micrometric eyepiece of microscope. Genital pieces were dry mounted on the same card as the studied specimens. The photos of penis were taken from standard angles so that figures of different species can be comparable (see explanation of Fig. 2). The penis was photographed in dorsal aspect, in such a way as to have its maximum width perpendicular to the optical axis of the microscope, and with base and apex on the same plane. The photo of apex was taken with an inclination of 45°. Lateral and dorso-lateral aspect of penis is shown only in case it can help a better understanding of the shape.

The following information are provided for each species: literature references (including citations in faunistic lists), type locality, type (holotype or lectotype) depository, type material examined, additional material examined, colour pattern of the upper side, size, body shape, male genitalia (principal features of penis and parameres), known distribution (according to material examined and suitable literature data), remarks (if necessary). The median lobe of aedeagus (penis) is briefly described and shown upside-down, as by classic Authors, that is with basal bulb down, the right side left and vice-versa.

The parameres were detached from the median lobe and glued with their inner face up. With a few exceptions, no peculiar features were found in either face of parameres, since they are poorly chitinized as a rule, and hardly maintain their original shape, so that comparison of parameres of different species is without practical use.

A question mark (?) beside the number of specimens means that the identification is uncertain, in case of e.g. damaged specimens or females only. Females with absolutely unrecognizable features were left out of the list of material, as for instance a series of 7 ex from Mozambique (Prov. Manica, 45 km NW Chimoio, 14-16.XII.2003 leg. A. Kudrna jr., CFP and CAB) belonging to group A.

The type specimens of the new species as well as the lectotypes and paralectotypes of the species represented so far by syntypes (type-series) were provided with a red label with the printed name of the species and indication of e.g. "holotypus", "paratypus", "neotypus", "lectotypus" or "paralectotypus".

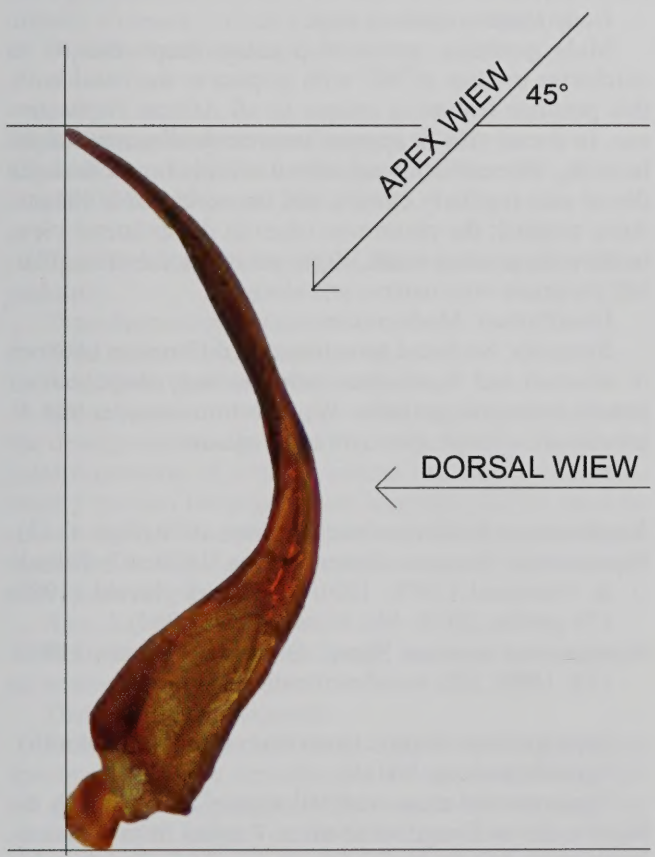


Fig. 2 - *N. fasciatus* Omer-Cooper, 1970, Gabon, Réserve Lopé Okanda. Penis right lateral view, direction of the optical axis in the dorsal view (perpendicular) and in the view of apex (45°). / Pene in vista laterale destra, direzione dell'asse ottico in vista dorsale (perpendicolare) e in vista dell'apice (45°).

Abbreviations

CAB = collection Armando Bilardo, Cassano Magnago (VA), Italy
CFP = collection Fernando Pederzani, Ravenna, Italy
CSR = collection Saverio Rocchi, deposited in the Natural History Museum of the University of Florence, Section Zoology "La Specola", Florence, Italy
AB = legit A. Bilardo
FP = legit F. Pederzani
ISNB = Institut Royal des Sciences naturelles, Bruxelles, Belgium
MNHN = Muséum national d'Histoire Naturelle, Paris, France
MRAC = Musée Royal de l'Afrique Centrale, Tervuren, Belgium
MSNM = Museo Civico di Storia Naturale, Milan, Italy
NHML = Natural History Museum, London, UK
NMP = Národní Muzeum, Praha, Czech Republic
NMW = Naturhistorisches Museum, Wien, Austria
L = total length of beetle (with head)
w = greatest width of beetle
L/w = ratio of total length to greatest width
Lmst/L = ratio of length of the mesotarsus (without claws) to total length of beetle
Lp = length of penis
ex = specimen/ specimens
m = meters above sea level
mm = millimeters
loc. cit. = the same paper as cited before, (from Latin "loco citato")

THE AFRICAN SPECIES OF THE GENUS *NEPTOSTERNUS*

This study on African *Neptosternus* resulted in the description of 4 new species, the designation of the neotype of *N. nuperus*, the designation of the lectotypes of 7 species and the proposal of 6 new synonimies. A taxon is downgraded from species to subspecies rank.

First of all the species were divided into three groups according to the schematic arrangement of the testaceous patches on elytra. In that we followed Omer-Cooper (1970) but we set three species groups instead of two as in Omer-Cooper (loc. cit.). The resulting schemes are shown in the figures, and can be described as follows:

Scheme A (the first species group in Omer-Cooper, loc. cit.) (Figs. 3-53)

a sub-basal band usually divided into two marks: the inner one close to suture, the outer being an expansion of the testaceous margin;

two intermediate marks: a juxtasutural inner mark and an outer squarish or sub-triangular mark connected to the margin; sometimes the two marks are jointed in a transverse band, or the inner mark may disappear;

a sub-triangular apical mark.

Scheme B (the second species group in Omer-Cooper, loc. cit.) (Figs. 54-72)

two sub-basal marks: an inner squarish mark that may have a backwards prolongement along the suture, and an outer mark, being an expansion of the marginal border; these marks may be sometimes jointed;

two intermediate marks, the inner one elongate, parallel to suture and even connected to the backwards prolongement of the inner sub-basal mark; the outer mark sub-triangular. The two marks may be connected to form a transverse band;

an additional elongate mark in the middle of elytron ("extra, short longitudinal testaceus line" in Omer-Cooper, loc. cit.);

a sub-triangular apical mark.

Scheme C (derived from Scheme A) (Figs. 73-78)

a sub-basal band, usually broken into up to 4 marks of various shape and size;

an intermediate band, composed of three marks, the innermost elongate and parallel to suture, the intermediate small, the outer sub-triangular; the inner and intermediate marks sometimes missing;

sometimes a small spot just behind the intermediate band;

a sub-triangular apical mark.

In each species group the species are treated in alphabetical order: known species first, new species next.

Group A
Species with elytral pattern arranged as in Scheme A

Neptosternus alluaudi Régimbart, 1903 (Figs. 3-5)

Neptosternus Alluaudi Régimbart, 1903: 16; Zimmermann (1920: 28); Guignot (1959a: 605).

Neptosternus alluaudi Régimbart: Bertrand & Legros (1971: 245); Rocchi (1991: 86); Nilsson (2001: 254).

Neptosternus silvester Guignot, 1960: 99; Rocchi (1991: 86); Nilsson (2001: 256); **n. syn.**

Type locality: - *alluaudi*: Madagascar (Fianarantosa); - *silvester*: Madagascar (Andobo).

Type depository: MNHN.

Type material examined: - *alluaudi*: lectotype ♀ (MNHN, Fig. 3), designated here: Madagascar, Centre-Sud, Alluaud 1901 [white label in print], Type [red label in print], Museum Paris, Coll. Ch. Alluaud [blue label in print], alluaudi [handwritten white label]; paralectotype ♂, 1 ex (MNHN), Mad.[agascar], B. D'Antongil, coll. Maurice Régimbart, 1908, [median lobe of aedeagus dry mounted but in bad condition, not suitable for taking photos]. - *silvester*: paratypes (1 ♂, Fig. 5 and 2 ♀♀) (MNHN), Andobo 190 m, forêt Antsingy, det. Antsalova, II-[19]57, P. Griveaud.

Additional material examined: Madagascar: N. Madagaskar, Antseranana distr., Sambirana riv., Marovato, VIII.2001, [leg.] J. Rolcik, 1 ♂ (Fig. 4) and 2 ♀♀ (NMP); N. Madagaskar, Antseranana distr., Sambirana riv., Marovato vill., 5-12.12.2001, leg. J. Horak, 1 ♂ and 1 ♀ (NMW).

Colour pattern of the upper side: head testaceous, pronotum brownish testaceous, anteriorly and posteriorly dark. Elytra blackish with bright testaceous pattern, arranged as in Scheme A.

Size: L 3.75-3.96, w 2.09-2.20, L/w 1.75-1.81, Lmst/L 0.16-0.17.

Body shape: regularly oval.

Male genitalia: penis of peculiar shape due to its clockwise rotation of 90° with respect to the basal bulb; this peculiar feature is unique in all African *Neptosternus*. In dorsal view it appears very narrow because of the twisting, whereas in lateral view it is fairly broad, with the dorsal side regularly convex and the ventral side sinuate. Apex pointed; the photo was taken in dorso-lateral view, to show its greatest width. Right paramere sub-triangular; left paramere very narrow and elongate.

Distribution: Madagascar.

Remarks: we found no substantial differences between *N. alluaudi* and *N. silvester*, either in body shape, colour pattern and male genitalia. We therefore consider that *N. silvester* is a junior synonym of *N. alluaudi*.

Neptosternus fasciatus Omer-Cooper, 1970 (Figs. 6-13)

Neptosternus fasciatus Omer-Cooper, 1970: 67; Bilardo & Pederzani (1978: 120); Bilardo & Rocchi (1990: 178 partim; 2010: 44); Nilsson (2001: 254).

Neptosternus ornatus Sharp: Bilardo & Rocchi (1990: 178; 1999: 232; misidentification).

Type locality: Nigeria (road from Enugo to Makurdi).

Type depository: NHML.

Type material examined: holotype ♂ (NHML, Fig. 6), Nigeria, R. on Enugo rd about n. 7 miles from Makurdi, 24.IV.1963, J.O.C., N. fasciatus n. sp., M.E. Bacchus det. 1978 Holotype, Holotype Brit. Mus. 1978-308.

Additional material examined: Nigeria: Port Harcourt, new Calabar R., [leg.] O. C. Umeozor, 1 ♀ ? (NHML). Gabon: Belinga, 12.3.1963, leg. H.Coiffait, 5 ex (MNW);

Franceville, vill. Mopia, riv. Ikengué, 19.IX.2008, leg. AB, 2 ex, Fig. 7; 29.VI-1.VII.2010, leg. AB, 2 ex (CAB); Franceville, vill. Mougouango, Fleuve Ogooué, 23.VIII.1992, leg. AB, 8 ex (CAB), 6 ex (CSR); Lambaréné, 7.VIII.1973, leg. AB & FP, 1 ex (CFP); Makokou, 25.5.1963, leg. H. Coiffait, 2 ex (NMW, Fig. 8); Mandji, route pour Massana, 27.I.1986, leg. AB, 3 ex (CAB, Fig. 9); M.ts Cristal, Kinguélé, 6.VIII.1973, leg. AB & FP, 2 ex (CAB, Fig. 10), 2 ex (CFP); Ntoum, 1.VIII.1973, leg. AB & FP, 8 ex (CAB, Fig. 11), 9 ex (CFP), 2 ex (CSR); Réserve Lopé Okanda, 5.VIII.1983, leg. AB, 19 ex (CAB, Figs. 12, 13), 4 ex (CSR); 2.II.1986, leg. AB, 8 ex (CAB).

Colour pattern of the upper side: head and pronotum reddish testaceous. The arrangement of light marks on elytra fairly follows the standard of group A; the holotype has a regular inner median spot; specimens from Gabon show some variations: the inner median spot may be smaller or even disappear and the outer median spot may be expanded as to reach the apical mark; the two anterior marks are connected in some specimens. The ground colour of elytra is reddish-brown in the holotype, and the marks are not very bright, so the contrast of the two colours is rather poor. The specimens from Gabon have a ground colour brownish-black and the yellow pattern is more evident.

Size: holotype L 3.30, w 1.87, L/w 1.77, Lmst/L 0.15, Lp 0.60; specimens from Gabon L 3.17-3.71, w 1.68-2.13, L/w 1.70-1.84, Lmst/L 0.14-0.17, Lp 0.61-0.70.

Body shape: regularly oval.

Male genitalia: penis distally widened and asymmetrical, apex pointed slightly bent rightwards; right paramere distally widened, so that it appears sub-rectangular.

Distribution: Nigeria, Gabon.

Neptosternus hedychrous Guignot, 1955

Neptosternus hedychrous Guignot, 1955c: 141; Rocchi (1991: 86); Nilsson (2001: 254).

Type locality: Madagascar (Sandragato, rivière Sahamaloto).

Type depository: unknown.

Type material examined: none.

Additional material examined: none.

Colour pattern of the upper side: upper side shown in the description (Guignot, 1955c: 142, fig. 1). The elytral pattern consists of a black sutural line and an approximately median irregular black longitudinal line on a testaceus background (Omer-Cooper, 1970: 64); the elytral marks are arranged as in paler specimens of *N. oberthueri oberthueri* Régimbart, 1903.

Size: L 3.00.

Body shape: *"*en ovale allongé, assez convexe, attenué en arrière*"*.

Distribution: Madagascar.

Remarks: this species was described on a single female specimen. The type depository is not reported in the original description (Guignot, 1955c); we could not trace any specimen of *N. hedychrous* in MNHN or elsewhere. There are no subsequent records of this species in literature. We just reported the available information on colour and size as from the original description. Due to the anomalous elytral pattern with diffuse testaceous colour, Omer-Cooper (loc. cit.) did not include this species in her Group I. However since we find analogies with the variable pattern of *N. oberthueri oberthueri* we included *hedychrous* in our Group A. This species is closely related to *N. oberthueri oberthueri* and possibly a synonym of the latter.

Neptosternus nuperus Guignot, 1954 (Figs. 14-18)

Neptosternus nuperus Guignot, 1954a: 7; Guignot (1954b: 31; 1955b: 182; 1959a: 602); Omer-Cooper (1970: 73); Bilardo & Pederzani (1978: 120); Bilardo & Rocchi (1990: 178 partim; 2010: 40; 2011: 195); Nilsson (2001: 256).

Neptosternus fasciatus Omer-Cooper: Bilardo (1982: 447); Bilardo & Rocchi (2011: 195; misidentification).

Type locality: (lost type) Democratic Republic of Congo (Upemba, Gorges de la Pelenge). Neotype (see remarks below): Gabon (Franceville, vill. Mopia, riv. Ikengué).

Type depository: (neotype) MSNM.

Type material examined: none. This species was described on a single male that should be deposited in ISNB. In reply to our request of type, they kindly sent a paratype which proved to be N. *compsus* Guignot, 1953. The confusion about the wrong paratype(s) of *N. nuperus* was already noted by Omer-Cooper (1970: 64); we suppose it depends either on a mislabelling or on a mistake by Guignot himself. See below the treatment of *N. compsus.*

Additional material examined: Cameroun: Kribi Nord, route pour Edea, 10.I.1979, leg. AB, 9 ex (CAB, Fig. 14), 1 ex (CFP). Gabon: Bakoumba (Franceville), Parc de Lékédi, 27.VIII 2008, leg. AB, 6 ex (CAB), 1 ex (CFP), 3 ex (CSR); Franceville, vill. Mopia, riv. Ikengué, 29.VI-1.VII.2010, leg. AB, 24 ex (CAB, Figs. 15, 16, 17), 12 ex (CSR); Kinguélé, 6.VIII.1973, leg. AB & FP, 1 ex (CFP); M.ts Cristal, Asseng Assala, 10.VIII.2006, leg. AB, 14 ex (CAB, Fig. 18), 27 ex (CSR); Ntoum, 1.VIII.1973, leg. AB & FP, 3 ex (CAB), 1 ♂ and 1 ♀ (CFP).

Colour pattern of the upper side: the ground colour of elytron is blackish brown; the pattern of yellow marks slightly differs from the basic arrangement of Group A. Sub-basal band consisting of two marks: an inner mark close to suture, and outer mark being the expansion of the margin; the two marks may be either separate or joined. The intermediate band is actually post-mediane, that is displaced a little further back as to the basic arrangement of Group A; this transverse band is broader at margin and tapers toward suture, sometimes broken up in elongate spots or even present only at margin as a sub-triangular mark. In a few specimens there is also a punctiform spot at middle of elytron. The apical yellow mark is sub triangular as usual.

Size: L 3.03-3.26, w 1.61-1.76, L/w 1.83-1.89, Lmst/L 0.17-0.19, Lp 0.56-0.58.

Body shape: sub-oval; in some specimens body elongate-oval, as body appears laterally constricted due to less rounded sides of elytra.

Male genitalia: penis apically widened and asymmetric; right side sinuate at apex, showing an inverted bending, so that apex appears to be bent rightwards; left side regularly rounded; apex rounded.

Distribution: Cameroun, Gabon, Democratic Republic of Congo.

Remarks: the above specimens were assigned to this species on the basis of descriptions and figures by Guignot

(1954a and 1954b) and Omer-Cooper (loc. cit.). Considering that (1) we were not able to find the holotype of *nuperus*, and (2) also Omer-Cooper (loc. cit.) could not trace it, we thought it best to designate a neotype of the species, in order to define this nominal taxon objectively. Since the lost holotype was described without paratypes and no material from the formerly type locality is available, we have chosen as "neotype" a male specimen from Gabon, labelled as follows: Gabon, Franceville, vill. Mopia, riv. Ikengué, 29.VI-1.VII.2010, leg. AB / ♂ / (MSNM).

Neptosternus oberthueri oberthueri Régimbart, 1903 (Figs. 19-20)

Neptosternus Oberthüri Régimbart, 1903: 15; Zimmermann (1920: 28); Guignot (1959a: 600).

Neptosternus oberthuri Régimbart: Bertrand & Legros (1971: 245); Rocchi (1991: 86).

Neptosternus oberthueri Régimbart: Nilsson (2001: 256)

Type locality: Madagascar (Sainte Marie).

Type depository: MNHN.

Type material examined: lectoype ♂ (MNHN, Fig. 19), designated here: S.te Marie de Madagascar, Perrot Frères, X-XII 1896 [white label in print], Type [red label in print], Museum Paris, coll. Maurice Régimbart 1908 [blue label in print], Oberthüri Rég. [handwritten white label]; paralectotypes 6 ex (MNHN), same data as lectotype; paralectotype ♂ (Fig. 20) and ♀ (MNHN), same data as lectotype, but with red label in print "cotype" and white label in print "Museum Paris, coll. F. Guignot".

Additional material examined: none.

Colour pattern of the upper side: head and pronotum dark-brown. Ground colour of elytra brown to dark-brown; elytral marks reddish testaceous. The lectotype has a regular arrangement of the yellow marks; in some paratypes the reddish-testaceous colour is more extended: the anterior band is prolonged backwards and even attains the inner median mark; the outer median mark is wider and attains the margin of elytron and the apical mark.

Size: L 3.47 (both lectotype Fig. 19 and paralectotype Fig. 20), w 1.82-1.84, L/w 1.88-1.91, Lmst/L 0.14-0.15, Lp 0.65-0.67.

Body shape: oblong, narrowed behind.

Male genitalia: penis peculiar for the apical part little widened, apex progressively pointed, slightly bent righwards.

Distribution: Madagascar.

Neptosternus oberthueri bilardoi Pederzani & Rocchi, 2008 **new status** (Figs. 21-25)

Neptosternus bilardoi Pederzani & Rocchi, 2008: 91.

Type locality: Madagascar (Andohahela).

Type depository: NMW.

Type material examined: paratype ♂ (CSR, Fig. 21), Madagascar, Andohahela (Tulear), Isaka, 9.IX.2001, leg. R. Gerecke & T. Goldschmidt.

Additional material examined: Madagascar: Manampatrana Bas. (PO 167), loc. Aff. de la Lantara, Sahanivoraky (Andringitra) Riv., 47°00'41"E - 22°13'33"S, leg. Orstom, Antananarivo, 4 ♂♂ and 4 ♀♀ (NMW, Figs. 22, 23, 24, 25).

Colour pattern of the upper side: arrangement of elytral marks as in standard Group A. Inner intermediate mark sometimes missing; in some specimens the testaceous pattern is reduced: the sub-basal band may even disappear and the intermediate band is reduced to only the outer mark, that is an expansion of the testaceous margin of elytron. One specimen has no testaceous pattern at all, and has wholly black elytra: at first sight it does not look like a *Neptosternus* and may even be mistaken for a small *Hydrocanthus* Say, 1823 (Fam. Noteridae).

Size: paratype L 4.04, w 2.11, L/w 1.91, Lmst/L 0.15, Lp 0.79; other specimens L 4.19-4.35, w 2.22-2.26, L/w 1.88-1.96, Lmst/L 0.15-0.16, Lp 0.76-0.82.

Body shape: elongate oval; elytra regularly tapering from base to apex.

Male genitalia: penis with apical part little widened, apex progressively pointed, slightly bent rightwards.

Distribution: Madagascar.

Remarks: this taxon differs from the nominotypical subspecies in much larger size and in minor differences in body shape and colour pattern, but the median lobe of aedeagus is alike. This subspecies occurs in southern Madagascar, while the nominotypical subspecies occurs in the north.

Neptosternus oblongus Régimbart, 1895 (Figs. 26-28)

Neptosternus oblongus Régimbart, 1895: 150; Régimbart (1903: 16); Zimmermann (1920: 28); Guignot (1959a: 599); Rocchi (1991: 86); Nilsson (2001: 256).

Type locality: Madagascar (Sikora).

Type depository: MNHN.

Type material examined: lectotype ♂ (MNHN, Fig. 26), designated here: Annanarivo, F. Sikora [white label in print], Type [red label in print], Museum Paris, coll. Maurice Régimbart 1908 [blue label in print], oblongus Rég. [handwritten white label]; paralectotypes 1 ♂ (Fig. 27) and 3 ♀♀ (MNHN), Ankarata, Madag[ascar] intér[ieur] (Sikora) [handwritten white label], Museum Paris, coll. Maurice Régimbart 1908 [blue label in print]; 3 ex (ISNB), Annanarivo, F. Sikora, det. Régimb.[art] [18]91, Neptosternus oblongus Rég. [handwritten white labels], 11195, Coll. R. I. Sc. N. B. [handwritten white labels].

Additional material examined: Madagascar: Ankaratra, Perrier, coll. Maurice Régimbart 1908, 1 ♂ (MNHN); Békily, III 1936, coll. F. Guignot, 1 ♂ (Fig. 28) and 1 ex of unknown sex (MNHN), 27 ex (ISNB).

Colour pattern of the upper side: head and pronotum reddish testaceous; pronotum with anterior and posterior margins brown. Ground colour of elytra brown to dark brown; elytral marks reddish testaceous; arrangement of elytral marks as in standard Group A.

Size: L 4.00-4.16, w 2.00-2.20, L/w 1.84-2.00, Lmst/L 0.14-0.15, Lp 0.70-0.73.

Body shape: elongate oval; elytra regularly tapering from base to apex.

Male genitalia: penis in dorsal view apically asymmetric, right side obviously sinuate, apex bent rightwards; left side from the maximum width onwards, nearly straight and gently bent to apex; tapering to a long point.

Distribution: Madagascar.

Neptosternus ornatus Sharp, 1882 (Figs. 29-42)

Neptosternus ornatus Sharp, 1882: 317; Kolbe (1883: 423); Régimbart (1895: 150); Zimmermann (1920: 28); Guignot (1956c: 221; 1959a: 600; 1959b:163); Omer-Cooper (1957: 22; 1965: 89; 1970: 65); Rocchi (1991: 86); Nilsson (2001: 256).

Laccophilus rotroui Pic, 1924: 21; **n. syn.**

Neptosternus Rotroui Pic: Zimmermann (1930: 25); Guignot (1959a: 606).

Neptosternus rotroui (Pic): Nilsson (2001: 256; 2003: 77).

Neptosternus tropicus Guignot, 1954a: 6; Guignot (1954b: 32; 1959a: 603); Omer-Cooper (1970: 71); Nilsson (2001: 257); **n. syn.**

Neptosternus meridianus Omer-Cooper, 1970: 66; Nilsson & Persson (1993: 82); Nilsson (2001: 255); **n. syn.**

Neptosternus nigeriensis Omer-Cooper, 1970: 67; Nilsson (2001: 256); **n. syn.**

Neptosternus alluaudi Régimbart: Omer-Cooper (1965: 89, misidentification).

Type locality: - *ornatus*: Madagascar; Zanzibar [Tanzania]; - *rotroui*: Algeria (Sidi-Bel-Abbès); - *tropicus*: Democratic Republic of Congo (Riv. Lufira); - *meridianus*: South Africa (Transvaal); - *nigeriensis*: Nigeria (road from Enugo to Makurdi).

Type depository: - *ornatus* NHML; - *rotroui* MNHN; - *tropicus* MRAC; - *meridianus* NHML; - *nigeriensis* NHML.

Type material examined: - *ornatus*: lectotype ♂ (NHML, Fig. 29), designated here [this specimen was chosen because the penis is intact], Madagascar 594 [handwritten white label], Neptosternus ornatus Sharp Cotype [printed white label], Sharp Coll. 1905-313 [printed white label]; paralectotypes: 1 ex ♂ [with penis a little damaged] (NHML), Madagascar, Type 594 [handwritten white label], Sharp Coll. 1905-313 [handwritten white label]; 2 ex glued on the same card (NHML), Zanzibar, Neptosternus ornatus, Ind. Typ. D. S. [handwritten on the card], Cotype [white label in print], Sharp Coll. 1905-313 [printed white label]; 1 ex ♂ (MNHN, Fig. 30), Zanzibar [handwritten white label], Sharp det., 1882 Neptosternus ornatus [printed white label, handwritten in part], Muséum Paris, coll. F. Guignot [printed white label] 4 ex (ISNB), Zanzibar, det. Sharp 1882.

- *rotroui*: lectotype ♀ (MNHN, Fig. 31), designated here: Algeria, Sidi-Bel-Abbès [printed white label], Neptosternus Rotroui Pic, Peyerimhoff det. [printed white label, handwritten in part], Type [white label printed in red letters], Museum Paris, coll. Rotrou [blue printed label, handwritten in part].

- *tropicus*: holotype ♂ (MRAC, Fig. 32), Congo Belge, P.N.U., R. Lufira pied Mt Sombwe (700 m), 16.VII.1949, Mis. G.F. de Witte.

- *meridianus*: holotype ♂ (NHML, Fig. 33), S. Africa, Transvaal, R. Vaal, 23.VIII.1960, M. Chutter, N. meridianus O.C., ♂ holotype, M.E. Bacchus det. 1978 Holotype, Holotype Brit. Mus. 1978-308; paratype ♀ (NHML), Transvaal, Vaal R., 10.XI.1959, M. Chutter, N. meridianus n. sp. ♀ allotype J.O.C., Allotype Brit. Mus. 1978-308.

- *nigeriensis*: holotype ♂ (NHML, Fig. 34), Nigeria, road to Enugo about 47 miles from Makurdi, 24.IV.1963, Neptosternus nigeriensis ♂ O.C. holotype; paratype ♀ (NHML), Nigeria, stream road Makurdi-Jos, 25.III.1963, J.O.C., Neptosternus nigeriensis O.C. ♀ allotype.

Additional material examined: Mali: Mopti, Niger River, 14°30'N - 4°12'W, leg. Komarek & Mayer, 1 ♀ (NMW). Sudan: S. Darfur, Cafindibie, stagnant pool river bed, V.1984, [leg.] H. Dodd, 17 ex (NHML, Fig. 35); Shambat, 2.XI.1966, [leg.] P. Stys, 1 ♂ (NMP). Senegal: Badi, 15.VIII-25.IX.1955, Mission IFAN au Parc National du Niokolo Koba, coll. F. Guignot, 7 ex (MNHN, Fig. 36), 1 ex (ISNB), 1 ex (MRAC). Guinea Bissau: 5 km N. de Madina-Salambande, 11-12.VII.2004, [leg.] A. Kudrna, 1 ♂ (CFP, Fig. 37). Burkina Faso: Boromo (Balé), VI.2005, leg. Moretto, 7 ex (CSR). Ivory Coast: Divo, [leg.] J. Decelle 28.XI.1963, 1 ex (CAB, Fig. 38); 3 ex (MRAC); Parc Nat. de la Comoé, 150 m, 12.VI.2000, [leg.] Rejnties 1 ♂ (Fig. 39) e 1 ♀ (CFP). Nigeria: Kabba Prov., Kabba, 19-23.XI.1949, [leg.] B. Malkin, 3 ex (NHML); Ilorin Prov., Ilorin, 15-18.XI.1949, [leg.] B. Malkin, 7 ex (NHML, Fig. 40); Sabon Gida, 19.4.1978, [leg.] P. Beron, 1 ♂ e 2 ♀♀ (NMW); Samaru, 13-20.VII.1970, [leg.] P. H. Ward, light trap 5 ex (NHML); Virgioi (N. E.), Garkida, 18.VIII.1971, [leg.] D. J. Lawis, 1 ♂ (NHML). Centrafrican Republic: Lobaye Pr., 50 km S. Boda, Ngoto vill., river Lobaye, 500 m, 7-9.XII.2008, [leg.] A. Kudrna jr., 1 ♀ (CFP); Mambere-Kadei, near Banga, 60 Km S. E. Berberati, river Mambere, 400 m, 7-8.VI.2009, [leg.] A. Kudrna jr., 5 ex ? (CFP); Ombella-Mpoko Pr., Bangui-Sibut road, 40 Km N Bangui, 380 m, 8-9.V.2009, [leg.] A. Kudrna j.r, 2 ♀♀ ? (CFP); Sangha-Mbaere Prov., 20 Km S.Nola, 600 m, 13-14.XII.2008, [leg.] A. Kudrna jr., 1 ♀ (CFP). Democratic Republic of Congo: Lac Albert, Kasenyi, 11.V-26.VI.1953, J. Verbeke - KEA, coll. F. Guignot, 1 ex (MNHN); Lac Albert, Kasenyi, U.V., 26.VI.1953, J. Verbeke - KEA, det. F. Guignot, 1956, 1 ex ♂ (Fig. 41) e 2 ♀♀ (ISNB). Tanzania: Ukiriguru, light trap, 16.I.1960, [leg.] I. A. D. Robertson, 2 ♂♂ (NHML, Fig. 42); Ukiriguru, light trap, 27.II.1960, [leg.] I. A. D. Robertson, 1 ex (NHML); Zanzibar, N. ornatus, J. Balfour-Browne det., 2 ex (NHML). Mozambique: Prov. Manica, 45 km N. W. Chimoio, 14-16.XII.2003, [leg.] A. Kudrna jr., 2 ex ? (CFP). South Africa: Kwazulu-Natal, S.W. Magudu 27°34'S - 31°35' W, 4-5.I.2009, [leg.] P. Schüle, 1 ♂ (NMP); North West 50 km S. Kimberley Ritchie, 22.I.2000, [leg.] J. Halada, 1 ♀ (NMP); Skukuza, K. N. P, 31.I.1974, [leg.] H.& A. Braack, at light, 1 ♀ ? (NHML). Madagascar: Mandrare Bas. (PO345), loc. Berohanga près de Lotibe, Bezavo Riv., 46°36'07"E - 24°38'57"S, Alt. 550 m, 06.06.1994, leg. Orstom, Antananarivo, 1 ♂ and 1 ♀ (NMW).

Colour pattern of the upper side: colour and elytral marks fairly variable. Type materials from Zanzibar and Madagascar have reddish-brown head and pronotum, and ground colour of elytra blackish-brown with reddish marks, so that the contrast of the two colours is rather poor. Arrangement of elytral marks as in basic Group A. The specimens from Tanzania, South Africa (as *meridianus*), Democratic Republic of Congo, Sudan, Guinea Bissau, Nigeria (as *nigeriensis*), Ivory Coast and Senegal have head and pronotum testaceous to brown testaceous, and ground colour of elytra brown with obvious testaceous marks; the inner intermediate mark is elongate as a rule and nearly attains the sub-basal and apical marks.

Size: L 3.37-3.85, w 1.84-2.04, L/w 1.81-1.89, Lmst/L 0.15-0.17, Lp 0.61-0.74.

Body shape: sub-elliptical; variable: some specimens are narrower, laterally constricted like *nuperus*, while other specimens are very broad and rather abruptly narrowed behind.

Male genitalia: penis in dorsal view somewhat widened and distally asymmetric; right side sinuate, apex bent rightwards; left side from the maximum width onwards nearly straight and gently bent to apex, tapering to a blunt point. *N. tropicus* (holotype) shows little differences in penis shape, i.e. more sinuate outline, right side more twisted and apex more bent rightwards, but in spite of the differences we consider it a junior synonym of *ornatus*. Right paramere widened at apex as a rule, so that it appears sub-rectangular.

Distribution: Algeria, Mali, Sudan, Ethiopia, Senegal, Guinea Bissau, Burkina Faso, Ivory Coast, Nigeria, Centrafrican Republic, Democratic Republic of Congo, Tanzania, Mozambique, South Africa, Madagascar.

Remarks: in the description of *N. alluaudi*, Régimbart (1903) questioned the occurrence of *N. ornatus* in Madagascar as reported by Sharp (1882), deeming that *ornatus* only occurs in Zanzibar; the same doubt was put later also by Zimmermann (1920), Guignot (1959a) and Omer-Cooper (1970). In our opinion Sharp's statement is trustworthy not only because the type material comprises specimens from Madagascar, but also because as a result of our examination of much material, *ornatus* is the most widespread *Neptosternus* in Africa. However we believe that the occurrence of *ornatus* in Madagascar and Zanzibar needs further confirmation by new records. In spite of minor differences in the elytral pattern, we believe that *rotroui*, *tropicus*, *meridianus* and *nigeriensis* belong to the same variable species.

Neptosternus pederzanii Bilardo & Rocchi, 2010 (Figs. 43-44)

Neptosternus pederzanii Bilardo & Rocchi, 2010: 35.

Neptosternus (?) *resartus* Guignot: Pederzani & Rocchi (1982: 82).

Type locality: Republic of Congo (Lague).

Type depository: CAB.

Type material examined: holotype (CAB, Fig. 43), paratypes 2 ex (CAB, Fig. 44), 13 ex (CFP), 1 ♀ (CSR): Popular Republic of Congo, env. Lague, le long du fleuve Mpama, à la lumière, 17.IV.1980, [leg.] G. Onore.

Additional material examined: Angola: Dundo, alt. 750 m, III.1948, à la lumière électrique, [leg.] A. de Barros Machado, 2 ♂♂ (NHML).

Colour pattern of the upper side: ground colour of elytra dark-brown with reddish-testaceous markings, arrangement of marks basically as in Group A but sub-basal outer mark reduced to an expansion of the testaceous margin; in some specimens all marks are strongly reduced: the outer and the apical marks look like an expansion of the testaceous margin and the inner marks are just two punctiform spots.

Size: L 2.62-3.00, w 1.54-1.75, L/w 1.72-1.88, Lmst/L 0.15-0.17, Lp 0.49-0.51.

Body shape: regularly oval.

Male genitalia: penis of peculiar shape: regularly widened from base to middle at the maximum width, hence progressively narrowed to apex. Right side sinuate with apex slightly bent rightwards; left side reaching apex with a gentle bending; apex broad, prolonged into a blunt point.

Distribution: Republic of Congo, Angola.

Neptosternus resartus Guignot, 1954 (Fig. 45)

Neptosternus resartus Guignot, 1954a: 7; Guignot (1954b: 32; 1955b: 182; 1959a: 606); Omer-Cooper (1970: 72); Bilardo & Rocchi (2010: 44); Nilsson (2001: 256).

Type locality: Democratic Republic of Congo (Upemba, Kaswabilenga).

Type depository: MRAC.

Type material examined: holotype ♂ (MRAC, Fig. 45), Congo Belge, P.N.U., Kaswabilenga (700 m), 3-4. IX.1947, Mis. G.F. de Witte (the holotype was examined in past times: see Bilardo & Rocchi, 2010).

Additional material examined: none.

Colour pattern of the upper side: elytral marks regularly arranged as in Group A.

Size: holotype L 2.99, w 1.71, L/w 1.75, Lmst/L 0.17, Lp 0.60.

Body shape: regularly oval.

Male genitalia: penis peculiar for lacking apical widening, almost sub-parallel at the middle; right side rather straight to three quarters of its length, hence sinuate and hollowed at the right; left side shortly widened after base, hence straight to apex; the latter narrowly rounded in a blunt point.

Distribution: Democratic Republic of Congo.

Neptosternus sombuicus Guignot, 1954 (Figs. 46-47)

Neptosternus sombuicus Guignot, 1954: 6; Guignot (1954b: 31; 1955b: 182; 1959a: 602); Omer-Cooper (1970: 69); Nilsson & Persson (1993: 82); Nilsson (2001: 257).

Neptosternus psephotus Guignot, 1955a: 2; Omer-Cooper (1970: 68); Nilsson (2001: 256); **n. syn.**

Neptosternus psephotes (sic !) Guignot: Bertrand & Legros (1975: 681).

Type locality: - *sombuicus*: Democratic Republic of Congo (Upemba, Riv. Lufira); - *psephotus*: Democratic Republic of Congo (Garamba).

Type depository: - *sombuicus* MRAC; - *psephotus* MRAC.

Type material examined: - *sombuicus*: holotype ♂ (MRAC, Fig. 46), Congo Belge, P.N.U., R. Lufira pied Mt. Sombwe (700 m), 16.VII.1949, Mis. G.F. de Witte; paratypes 7 ex (MRAC), same data as holotype.

- *psephotus*: holotype ♂ (MRAC, Fig. 47), Congo Belge, Parc National de la Garamba, Mis. H. De Saeger, I/a/3, 16.XII.1949, Réc. Demoulin, 132; paratype ♀ (MRAC), same data as holotype.

Additional material examined: none.

Colour pattern of the upper side: head and pronotum reddish testaceous to light brown (in the holotype). Ground colour of elytra dark brown; elytral marks reddish testaceous; elytral marks regularly arranged as in Group A.

Size: L 3.77-4.04, w 2.13-2.19, L/w 1.76-1.84, Lmst/L 0.15-0.16, Lp 0.78.

Body shape: elongate oval.

Male genitalia: penis not much narrowed after basal bulb, so that it appears less widened at the middle; right side obviously sinuate, with rightwards bent apex; left side after middle rather straight, hence gently curved to apex, terminating in a long sharp point.

Distribution: Ethiopia, Democratic Republic of Congo.

Remarks: we cannot find any difference between *N. sombuicus* and *N. psephotus*, except for the apex of penis, that is broken and missing in *psephotus*, while it is entire in *sombuicus*. We therefore consider *psephotus* a junior synonym of *sombuicus*.

Neptosternus subopacus Guignot, 1956 (Fig. 48)

Neptosternus subopacus Guignot, 1956a: 253; Nilsson (2001: 257).

Type locality: Democratic Republic of Congo (Tshuapa, Bokuma).

Type depository: MRAC.

Type material examined: holotype ♂ (MRAC, Fig. 48), Equateur: Bokuma, VII.1952, [leg.] R. P. Lootens.

Additional material examined: none.

Colour pattern of the upper side: head and pronotum testaceous; ground colour of elytra light-brown, elytral marks testaceous, regularly arranged as in Group A. Upperside dull. As far as we know, this is the only African *Neptosternus* with obviously microsculptured elytra.

Size: holotype L 3.43, w 1.93, L/w 1.78, Lmst/L 0.17, Lp 0.70.

Body shape: sides of elytra rather sub-parallel in the basal two thirds, hence abruptly narrowed to apex.

Male genitalia: penis of peculiar shape: widened from base to the maximum width after the middle, but not very broad; right side sinuate with rightwards bent apex; left side regularly attaining apex in a gentle curve; apex broad, obviously turned to the right in a sort of hook, with broadly rounded tip.

Distribution: Democratic Republic of Congo.

Neptosternus tricuspis Guignot, 1954 (Fig. 49)

Neptosternus tricuspis Guignot, 1954a: 6; Guignot (1954b: 30; 1955b: 182; 1956b: 322; 1959a: 602); Omer-Cooper (1970: 72); Nilsson (2001: 257).

Type locality: Democratic Republic of Congo (Upemba, Riv. Lufira).

Type depository: ISNB.

Type material examined: paratypes 73 ex (ISNB, Fig. 49), Congo Belge, P.N.U., R. Lufira pied mt. Sombwe (700 m), 16.VII.1949, Mis. G.F. de Witte. Holotype not seen.

Additional material examined: Angola: Dundo, 17.VIII.1953, [leg.] L. Carvalho, à la lumière, 1 ♂ (CFP).

Colour pattern of the upper side: head and pronotum testaceous; ground colour of elytra dark-brown; elytral marks testaceous, regularly arranged as in Group A.

Size: paratype shown in the photo L 3.29, w 1.85, L/w 1.77, Lmst/L 0.17, Lp 0.71; other specimens L 3.21-3.52, w 1.76-1.92, L/w 1.77-1.83, Lmst/L 0.17.

Body shape: regularly oval.

Male genitalia: penis not much narrowed after basal bulb, so that it appears less widened at the middle; right side hardly sinuate, straight at apex; left side almost straight after the middle, then attaining apex in a gentle curve; tip broadly rounded.

Distribution: Democratic Republic of Congo, Angola.

Neptosternus bartolozzii **n. sp**. (Figs. 50-53)

Neptosternus "specie indeterminata A" Bilardo & Rocchi (2010: 46; 2011: 195).

Neptosternus nuperus Guignot: Bilardo & Rocchi (1999: 232, misidentification).

Type locality: Gabon, M.ts Cristal, Asseng Assala.

Type depository: MSNM.

Type material: holotype ♂ (MSNM, Fig. 50), Gabon, M.ts Cristal, Asseng Assala, 10.VIII.2006, leg. AB; paratypes (same data as holotype) 1 ex ♀ (MSNM, Fig. 51), 5 ex (CAB), 20 ex (CSR); Gabon, M.ts Cristal, Andok Foula, 21.VIII.2006, leg. AB, 1 ex (CAB); Gabon, M.ts Cristal, Kinguélé, 6.VIII.1973, leg. AB, 2 ex (CAB); Gabon, Réserve Lopé Okanda, 5.VIII.1983, leg. AB, 7 ex (CAB), 2 ex (CSR); Gabon, Franceville, vill. Mopia, riv. Ikengué, 29.VI- 1.VII.2010, leg. AB, 12 ex (CAB, Fig. 52), 21 ex (CSR), 2 ex (NHML), 2 ex (MNHN), 2 ex (MRAC), 2 ex (ISNB), 2 ex (NMW), 2 ex (NMP); Gabon, Makokou, 24.VIII.1987, leg. AB, 3 ex (CAB, Fig. 53); Gabon, Franceville, Bakoumba, Parc de Lékédi, 27.VIII.2008, leg. AB, 6 ex (CAB), 3 ex (CSR); Gabon, Franceville, vill. Mougouango, Fleuve Ogooué, 23.VIII.1992, leg. AB, 5 ex (CAB), 2 ex (CSR); Central African Rep., Mambere-Kadei, near Banga, 60 Km SE Berberati, river Mambere, 400 m, 7-8.VI.2009, [leg.] A. Kudrna jr., 1 ex (CFP).

Additional material examined: 1 ex ♀ (CSR), Democratic Republic of Congo, Ituri, Epulu, m 600, 17.VIII.1984, leg. G. Carpaneto; it cannot be identified with certainty, so it was not included in paratypes.

Diagnosis: this species belongs to group A; it can be distinguished by the following combination of characters: small size, sub-elliptical body outline from the base of antennae to the extremity of elytra, broadest behind the sub-basal band of elytron and regularly tapering in front and behind, pronotum with anterior and posterior borders dark-brown. Dorsal surface shiny, without detectable microsculpture.

Head: reddish.

Pronotum: reddish with anterior and posterior borders of the same brown colour as the ground color of elytra.

Elytra: ground colour light-brown to dark-brown or piceous, colour pattern typical of the group, but with inner median mark reduced or missing.

Prosternum: distinctly keeled from base to the apex of the median spine.

Underside: colour reddish to reddish-brown.

Size: holotype L 2.80, w 1.51, L/w 1.85, Lmst 0.44, Lmst/L 0.16, Lp 0.60; paratypes.L 2.68-3.03, w 1.44-1.70, L/w 1.77-1.90, Lmst/L 0.15-0.17, Lp 0.60-0.61.

Male genitalia: penis in dorsal view sinuate, distally slightly asymmetric; right side sinuate with apex slightly turned rightwards; left side from the maximum width onwards almost straight converging to apex; tip pointed.

Derivatio nominis: this species is named in honour of

Dr. Luca Bartolozzi, chief of the the Zoology Section "La Specola" of the Natural History Museum of the University of Florence, for the kind co-operation and continuous help in our entomological work.

Distribution: Gabon, Central African Republic, Democratic Republic of Congo (?).

Group B
Species with elytral pattern arranged as in Scheme B

Neptosternus africanus Peschet, 1916 (Figs. 54-56)

Neptosternus africanus Peschet, 1916: 316; Legros (1949: 53; 1954: 269; 1958: 211); Guignot (1954b: 29; 1959a: 604); Omer-Cooper (1957: 22; 1958: 52; 1970: 77); Nilsson (2001: 253).

Type locality: Republic of Congo (Fort Crampel).

Type depository: MNHN.

Type material examined: lectotype ♀ (MNHN, Fig. 54), designated here: Fort-Crampel, Congo Français [printed white label], Museum Paris 1946, Coll. R. Peschet [printed blue label], Type [printed red label0000], Neptosternus africanus R. Peschet [handwritten white label]. In the description, Peschet (1916) mentioned also the following specimens from the formerly French Congo, that were not traced in MNHN: 1 ex Ouagga (Ovahiné), 1 ex Bahr-Sara, près le confluent de la Tala, 1 ex bassin du Chari, rivière Gribingui.

Additional material examined: Chad: Logoneufer b. Lai, Tschadgebiet, AEF., leg. Franz, 1 ex (NMW). Sudan: Soudan égyptien, Région de Sennar, 1906, coll. Guignot, 1 ♂ (MNHN, Fig. 55), Guinea: Nimba (Guinée), Yalanzou, M. Lamotte, II-VI 42 (1942?), N. africanus, C. Legros det., 1 ex ♀ ? (MNHN). Centrafrican Republic: Mambere-Kadei, near Banga, 60 Km S. E. Berberati, river Mambere, 400 m, 7-8.VI.2009, [leg.] A. Kudrna jr., 2 ♀♀ (CFP). Democratic Republic of Congo: Congo Belge, P.N.U. Kaswabilenga (700 m), 16-X-1947, Mis. G. F. De Witte, coll. Guignot, 1 ♂ (MNHN, Fig. 56); Faradje, Aba, 22.IV.1930, [leg.] A. Collart, N. africanus, det. Gschwendtner,1 ex ? (ISNB). Kenya: Kakamega forest N.R., 1600 m, 21.IX-10.X.2005, [leg.] J. Holstein & D. Bartsch, 1 ♀ ? (NMP). Angola: District de Huïlla de Cutchy au Cuelei, Mission Rohan-Chabot, 1914, janvier, N. africanus, R. Peschet det. 1924, 1 ♂ (MNHN). Unknown country (possibly Democratic Republic of Congo): Palanga Dizi, 16.VII.1926, [leg.] A. Collart, N. africanus, R. Peschet det., 1 ex ? (ISNB). Unknown country: Kai Baku, 8.VII.1926, [leg.] A. Collart, N. africanus, det. Gschwendtner, 1 ex ? (ISNB).

Colour pattern of the upper side: head and pronotum reddish testaceous, pronotum with anterior and posterior borders of the same brown colour as the ground colour of elytra; ground colour of elytra brown; elytra marks testaceous; juxtasutural testaceous line broken in some specimens, additional elongate mark in the middle of elytron (*sensu* Omer-Cooper, 1970) always detectable.

Prosternum: slightly keeled at base; transversely convex (not keeled) or almost flattened at middle.

Size: L 2.91-3.56, w 1.67-1.91, L/w 1.74-1.90, Lmst/L 0.15-0.19 (this is the only African species showing such a wide range of variability in size), Lp 0.63-0.64.

Body shape: regularly oval.

Male genitalia: penis symmetrical in the distal part and apex rounded.

Distribution: Chad, Sudan, Guinea, Cameroun, Centrafrican Republic, Republic of Congo, Democratic Republic of Congo, Kenya, Angola, Malawi, Zimbabwe, South Africa.

Neptosternus compsus Guignot, 1953 (Figs. 57-60)

Neptosternus compsus Guignot, 1953: 2; Guignot (1954b: 29; 1959a: 605); Omer-Cooper (1970: 78); Bilardo & Rocchi (1990: 178; 2010: 42); Nilsson (2001: 254).

Type locality: Democratic Republic of Congo (Upemba, Kaswabilenga).

Type depository: MRAC.

Type material examined: holotype ♂ (MRAC, Fig. 57), Congo Belge, P.N.U., Kaswabilenga (700 m), 14-25.X.1947, Mis. G.F. de Witte; paratypes: 4 ex (ISNB), 5 ex (MRAC), Congo Belge, P.N.U., Kaswabilenga (700 m), 14-25.X.1947, Mis. G.F. de Witte; 2 ex (MRAC, Fig. 58), 1 ex (ISNB, Fig. 59), same data but collection date 3-4.XI.1947. [the latter specimen, lodged in ISNB, is pinned with a printed red label *"paratype"* and a printed/handwritten red label *"*F. Guignot det., 1953 Neptosternus nuperus n. sp.*"*; it is unboutedly a *N. compsus*, as it was already ascertained by Omer-Cooper (1970), and is obviously mislabelled]; 1 ex (ISNB), Congo Belge, P.N.U., Kaswabilenga r. dr. Lufira (700 m), 8.XI.1947, Mis. G.F. de Witte; 3 ex (ISNB), 4 ex (MRAC), Congo Belge, P.N.U., Lukawe affl. r. dr. Lufira (700 m), 6-9.X.1947, Mis. G.F. de Witte.

Additional material examined: Nigeria: Samaru, 13-20.VII.1970, [leg.] P. H. Ward, light trap, 1 ♀ (NHML). Gabon: Belinga, 18.3.1963, [leg.] H.Coiffait, 4 ex (NMW); Makokou, 25.5.1963, [leg.] H.Coiffait, 1 ex (NMW); Makokou, 1-14. V.1971, [leg.] J. Mateu, 2 ex (NMP); Makokou, 23.VIII.1987, leg. AB, 2 ex (CAB); Ntoum, 1.VIII.1973, leg. AB & FP, 2 ex (CFP). Centrafrican Republic: Nana-Mambere Pr., 5 km N.E. Baoro, 60 km S.E. Bouar, 850 m, 31.V-3.VI.2009, [leg.] A. Kudrna jr., 1 ♂ (CFP); Mambere-Kadei, near Banga, 60 Km S. E. Berberati, river Mambere, 400 m, 7-8.VI.2009, [leg.] A. Kudrna jr., 7 ex (CFP); Nana-Mambere Prov., 20-60 km W Bouar, 650 m, 25-27.III.2010, [leg.] A. Kudrna jr., 19 ex (CFP, CAB, CSR, Fig. 60). Angola: Dundo, 10-13. VIII.1953, [leg.] L. Carvalho, à la lumière, 2 ex (CAB), 1 ♂ e 1 ♀ (CFP). Mozambique: Prov. Tete, ca. 40 km S. W. Tsangano, 7-8.XII.2005, [leg.] A. Kudrna jr., 1 ♂ e 1 ♀ (CFP). Zimbabwe: South Rhodesia, lower Pungwe River, 20ml. S. Mt. Inyangani, VIII-IX.1958, [leg.] R. Watmough, 2 ♀♀ (NHML).

Colour pattern of the upper side: head and pronotum testaceous, pronotum with anterior and posterior borders of the same brown colour as the ground colour of elytra; ground colour of elytra brown; elytra marks testaceous; juxtasutural testaceous line not attaining the inner sub-basal mark as a rule; additional elongate mark in the middle of elytron (*sensu* Omer-Cooper, 1970) always detectable.

Prosternum: holotype without prosternal keel; in some paratypes (from the same locality and date) prosternum distinctly keeled at base, transversely convex (not keeled) behind, and flattened towards apex of the median spine; some specimens from Makokou (Gabon) have the proster-

num distinctly keeled its whole length, while specimens from Angola lack prosternal keel.

Size: holotype L 2.85, w 1.65, L/w 1.73, Lmst/L 0.22, Lp 0.55; other ex L 2.60-2.90, w 1.45-1.66, L/w 1.71-1.87 Lmst/L 0.22-0.25.

Body shape: regularly oval.

Male genitalia: penis distally much widened, fairly symmetrical, apex pointed and gently turned rightwards.

Distribution: Nigeria, Gabon, Centrafrican Republic, Democratic Republic of Congo, Angola, Mozambique, Zimbabwe, South Africa.

Remarks: prosternum not keeled as a rule, except for some specimens with trace of a keel, however all specimens from Centrafrican Republic have more or less keeled prosternum. We have chosen to attach little importance to geographical variations, being not accompanied by other taxonomic differences. In any case *N. compsus* is easy to identify as it differs from other small-sized species by the peculiar length of mesotarsi and the broad distal part of penis.

As said before under the treatment of *N. nuperus*, the paratype of *N. nuperus* lent for study by ISNB is not that species but *N. compsus*, as already noted by Omer-Cooper (1970: 64); its prosternum is not keeled and the penis is the same as in *compsus*; also size (L 2.82, w 1.60, L/w 1.76, Lmst/L 0.24, Lp 0.53) and habitus agree with the features of *compsus* (see Fig. 59).

Neptosternus distinctus Omer-Cooper, 1970 (Fig. 61)

Neptosternus distinctus Omer-Cooper, 1970: 74; Nilsson (2001: 254).

Type locality: Nigeria (R. Assob about 36 miles from Jos).

Type depository: NHML.

Type material examined: holotype ♂ (NHML, Fig. 61), Nigeria, R. Assob, nr. Jos, 13.IV.1963, J.O.C., Neptosternus ♂ distinctus J.O.C., M.E. Bacchus det. 1978, Holotype, Brit. Mus. 1978-308.

Additional material examined: none.

Colour pattern of the upper side: head and pronotum testaceous, pronotum with anterior and posterior borders of the same brown colour as the ground colour of elytra; ground colour of elytra brown; elytral marks testaceous; juxtasutural testaceous line attaining the inner sub-basal mark; additional elongate mark in the middle of elytron (*sensu* Omer-Cooper, 1970) fairly evident.

Size: L 3.37, w 1.77, L/w 1.90, Lmst/L 0.19, Lp 1.01.

Body shape: regularly oval.

Male genitalia: penis peculiar for its large size; right side sinuate, deeply hollowed after the middle; left side progressively tapering to sharply pointed apex.

Distribution: Nigeria.

Neptosternus pumicatus Guignot, 1949 (Figs. 62-64)

Neptosternus pumicatus Guignot, 1949: 14; Guignot (1959a: 601); Omer-Cooper (1958: 52; 1967: 60; 1970: 78); Franciscolo (1986: 29); Nilsson (2001: 256); Bilardo & Rocchi (2010: 40).

Neptosternus "specie indeterminata B" (unidentified species B) Bilardo & Rocchi (2010: 47; 2011: 195).

Type locality: Democratic Republic of Congo (Lusengi).

Type depository: ISNB.

Type material examined: lectotype ♂ (ISNB, Fig. 62), designated here: Lusengi, 11.IV.1926 [printed white label], Type ♂ [handwritten red label], Dr. F. Guignot det., 1949 Neptosternus pumicatus Guign. Type [printed white label, hanwritten in part]; paralectotype 1 ex (ISNB, Fig. 63), same data as lectotype.

Additional material examined: Gabon: M.ts Cristal, Andok Foula, 21.VIII.2006, leg. AB, 1 ex (CAB, Fig. 64). Angola: 7 mls. W. Gabela at ligth, 16-18.III.1972 (no collector name), 1 ex (CFP).

Colour pattern of the upper side: head and pronotum testaceous, pronotum with anterior and posterior borders of the same brown colour as the ground colour of elytra; ground colour of elytra brown; elytral markings testaceous; juxtasutural testaceous line not attaining the inner sub-basal mark as a rule; the additional mark in the middle of elytron (*sensu* Omer-Cooper, 1970) in lectotype is reduced to a short dash on the left elytron while it is hardly visible as a punctiform spot on the right elytron (see Omer-Cooper, l. c.: 64) and in paralectotype it is punctiform on both elytra. The specimen from Gabon has no additional marks at all, but its identification is based on the feature of aedeagus only, in accordance with Omer-Cooper (1070: 64) "the presence of this extra longitudinal testaceus line on the elytra is of taxonomic importance although its absence, if not accompanied by an aedeagal difference, would not necessarily invalidate the species".

Size: lectotype and paralectotype L 2.81-3.01, w 1.53-1.61, L/w 1.84-1.87, Lmst/L 0.19-0.20, Lp 0.57.

Body shape: oblong oval, rather compressed at sides.

Male genitalia: penis distally asymmetric, with rounded apex, like *africanus* Peschet, 1916.

Distribution: Sierra Leone, Nigeria, Gabon, Democratic Republic of Congo, Angola, Zimbabwe, South Africa.

Neptosternus simulator Omer-Cooper, 1970 (Figs. 65-66)

Neptosternus simulator Omer-Cooper, 1970: 75; Nilsson (2001: 257).

Neptosternus africanus Peschet: Omer-Cooper (1957: 22; 1958: 52; misidentification).

Neptosternus resartus Guignot: Omer-Cooper (1965: 90, misidentification).

Type locality: Rhodesia [Zimbabwe] (River Inganyi, 38 miles from Salisbury).

Type depository: NHML.

Type material examined: paratype ♂ (NHML, Fig. 65), Transvaal, Waterberg dist., Poer Zyn R., 19.8.1948, N. simulator n. sp. ♂ type, J.O.C., M.E. Bacchus det. 1978 Holotype, Holotype Brit. Mus. 1978-308 [the label "Holotype" is wrong: This specimen from Transvaal is a paratype because the true holotype should be from Rhodesia, as stated by Omer-Cooper (1970: 75)]; Paratype ♀ (NHML), same data, 19.August.[19]48, J.O.C., N. simulator n. sp. ♀ allotype, Allotype, Brit. Mus. 1978-308.

Additional material examined: Centrafrican Republic: Nana-Mambere Prov., 20-60 km W Bouar, 650 m, 25-27. III.2010, [leg.] A. Kudrna jr., 53 ex (CFP, CAB, CSR, Fig. 66).

Colour pattern of the upper side: head and pronotum testaceous, pronotum with anterior and posterior borders of the same colour as the ground colour of elytra; ground colour of elytra brown; elytral markings testaceous; juxtasutural line entire and not connected with other marks; additional mark in the middle of elytron (*sensu* Omer-Cooper, 1970) fairly evident.

Size: paratype ♂ L 3.15, w 1.70, L/w 1.86, Lmst/L 0.19, Lp 0.60; paratype ♀ L 3.04, w 1.73, L/w 1.76, other ex L 2.91-3.21, w 1.67-1.81, L/w 1.73-1.83, Lmst/L 0.21-0.24.

Body shape: oval, slightly compressed at sides.

Male genitalia: penis in dorsal view distally widened and asymmetrical: right side sinuate with apex slightly turned rightwards; left side from the maximum width onwards almost straight, progressively attaining apex in a gentle curve; tip elongate and pointed.

Distribution: Centrafrican Republic, Malawi, Zimbabwe, South Africa.

Remarks: at first sight this species closely resembles *africanus* Peschet, but it differs by longer mesotarsi and above all by the pointed apex of penis, whereas in *africanus* the apex of penis is rounded.

***Neptosternus komareki* n. sp.** (Figs. 67-68)

Type locality: Benin, Dep. Platuau, Pobé near Crabé (village), 7.II.2006, 06°57'24,2"N - 02°40'28,2"E, 10 m a.s.l. tributary to Idi river.

Type depository: NMW

Type material: holotype ♂ (NMW, Fig. 67), Benin, Dep. Platuau, Pobé near Crabé (village), 7.II.2006, 06°57'24,2"N - 02°40'28,2"E, 10 m a.s.l. tributary to Idi river, leg. Goergen, Komarek & Houngué; paratypes: 1♂ (NMW), same data as holotype; Gabon, Parc Nat. M.ts de Cristal, Kinguélé, riv. Bimvan, à la lumière, 31.V.2012, leg. AB, 2♂♂, 1♀ (CAB, CSR, Fig. 68); Gabon, M.ts de Cristal, Vill. Asseng Assala, 1 km route pour la riv. Noya, à la lumière, 6-8.VI.2012, leg. AB, 2♂♂, 1♀ (CAB, CSR).

Diagnosis: this species belongs to group B as for colour pattern of elytra; it can be distinguished by the following combination of characters: small size, subelliptical body outline, continuous from the base of antennae to the extremity of elytra, maximum width at the middle, low ratio L/w, that gives the body a wide and short outline.

Head: reddish.

Pronotum: reddish, with anterior and posterior borders of the same colour as the ground colour of elytra.

Elytra: ground colour of elytra dark-brown; elytral marks-brown-testaceous, arranged as in group B; juxtasutural line entire and almost attaining the apical mark; additional mark in the middle of elytron (*sensu* Omer-Cooper, 1970) reduced to a short stripe but fairly evident on both elytra.

Prosternum: distinctly keeled from base to the apex of the median spine.

Underside: dark-brown.

Size: L 2.63-2.90, w 1.57-1.67, L/w 1.67-1.75, Lmst/L 0.18-0.19 (holotype L 2.75, w 1.54, L/w 1.79, Lmst/L 0.19, Lp 0.56).

Body shape: sub-elliptical.

Male genitalia: penis distally symmetrical with apex pointed, very much ressembling that of *langoensis* Bilardo & Rocchi, 2010.

Derivatio nominis: this species is named in honour of one of the collectors, Dr. Albrecht Komarek (Vienna), specialist of Coleoptera Hydrophilidae.

Distribution: Benin, Gabon.

***Neptosternus longitarsis* n. sp.** (Figs. 69-70)

Type locality: Gabon, Franceville, vill. Mopia, petite riv. alt. 446 m, S 01°54,522', E 013°38,182'.

Type depository: CAB.

Type material: holotype ♂ (CAB, Fig. 69), Gabon, Franceville, vill. Mopia, petite riv. alt. 446 m, S 01°54,522', E 013°38,182', 1.VII.2010, leg. AB; paratypes: Gabon, Parc National des Plateaux Batéké, Camp Ntsa, forêt dense, 8-13.IX.2008, à la lumière, leg. AB, 2 ♀♀ (CAB, Fig. 70 e CSR); Gabon, Parc Nat. M.ts de Cristal, Kinguélé, riv Bimvan, à la lumière, 31.V.2012, leg. AB, 1♀ (CAB); M.ts de Cristal, Vill. Asseng Assala, 1 km route pour la riv. Noya, à la lumière, 6-8.VI.2012, leg. AB, 1♂ (CAB).

Diagnosis: this species belongs to group B as for colour pattern of elytra; it can be distinguished by its small size and above all by the peculiar length of mesotarsomeres (mesotarsi without claws).

Head: testaceous.

Pronotum: narrowly testaceous at the middle, with broad anterior and posterior borders of the same colour as the ground colour of elytra.

Elytra: ground colour almost black; elytral marks testaceous, placed as usual in group B, but with a somewhat peculiar arrangement (see photo in Figs. 69-70); additional mark in the middle of elytron (*sensu* Omer-Cooper, 1970) fairly obvious on both elytra. One of paratypes has an additional small irregular spot between the juxtasutural line and. the outer median mark.

Prosternum: distinctly keeled from base to the apex of the median spine.

Underside: reddish-brown.

Size: L 2.64-3.06, w 1.48-1.62, L/w 1.78-1.88, Lmst/L 0.22-0.24 (holotype L 2.80, w 1.54, L/w 1.82, Lmst/L 0.22, Lp 0.54).

Body shape: regularly oval.

Male genitalia: penis almost symmetrical; in dorsal view with an obvious distal widening; right and left sides symmetric in relation to the median axis, and regularly tapering to the rounded apex.

Derivatio nominis: the species is named in reference to the anomalous length of mesotarsi.

Distribution: Gabon.

***Neptosternus maliensis* n. sp.** (Figs. 71-72)

Type locality: Mali, 100 km W. Sikasso, Bagoé river, 11° 27' N, 6° 35' W.

Type depository: NMW.

Type material: holotype ♂ (NMW, Fig. 71), Mali, 100 km W. Sikasso, Bagoé river, 11° 27' N, 6° 35' W, 24.2.2000, leg. Komarek & Mayer; paratypes (same data

as holotype): 6 ♂♂ and 11 ♀♀ (NMW, Fig. 72), 1 ♂ and 1 ♀ (NMP).

Diagnosis: this species belongs to group B as for the colour pattern of elytra; it can be distinguished by the moderate size and the sub-parallel sides of body, abruptly narrowed behind.

Head: reddish tetaceous.

Pronotum: reddish testaceous with anterior and posterior borders of the same colour as the ground colour of elytra.

Elytra: ground colour brown; marks brown-testaceous arranged as in Scheme B, all of them very obvious; subbasal marks separate, juxtasutural line continuous and well defined; additional mark in the middle of elytron (*sensu* Omer-Cooper, 1970) fairly evident.

Prosternum: distinctly keeled only at base.

Underside: light-brown.

Size: L 3.06-3.32, w 1.63-1.77, L/w 1.82-1.92, Lmst/L 0.21-0.22, Lp 0.64-0.66 (holotype: L 3.12, w 1.63, L/w 1.91, Lmst/L 0.21, Lp 0.66).

Body shape: elongate, with sub-parallel sides, abruptly tapering to apex.

Male genitalia: penis almost symmetrical, in dorsal view slightly narrowed between basal bulb and the distal part, where it is widened, with right and left sides almost symmetric in relation to the median axis, and regularly tapering to the rounded apex.

Derivatio nominis: the species is named in reference to the country where it was collected.

Distribution: Mali.

Group C
Species with elytral pattern arranged as in Scheme C

Neptosternus batekensis Bilardo & Rocchi, 2010 (Figs. 73-74)

Neptosternus batekensis Bilardo & Rocchi, 2010: 37

Type locality: Gabon (National Park of Plateaux Batéké, Camp Ntsa).

Type depository: MSNM.

Type material examined: holotype ♂ (MSNM), Gabon, Parc National des Plateaux Batéké, Camp Ntsa, forêt dense, 8-13.IX.2008, à la lumière, leg. AB; paratypes (same data as holotype): 4 ex (CAB, Figs. 73-74), 5 ex (CSR); 1 ex (CAB), Gabon, Franceville, vill. Mopia, riv. Ikengué, 29.VI-1.VII.2010, leg. AB.

Additional material examined: none.

Colour pattern of the upper side: head, pronotum and ground colour of elytra black, elytral marks testaceous, arranged as in Scheme C, with a small spot in the middle of elytron.

Size: L 2.63-2.71, w 1.48-1.51, L/w 1.75-1.81, Lmst/L 0.20, Lp 0.54.

Body shape: regularly oval.

Male genitalia: penis with distal part symmetrical and apex rounded.

Distribution: Gabon.

Remarks: *N. batekensis* and *N. susinii* Bilardo & Rocchi, 2010 are the only African species with head entirely black; besides in *batekensis* the pronotum is entirely black, while in *susinii* it shows a narrow median band dark-testaceous.

Neptosternus langoensis Bilardo & Rocchi, 2010 (Figs. 75-76)

Neptosternus langoensis Bilardo & Rocchi, 2010: 36

Type locality: Republic of Congo (National Park of Odzala, Mboko).

Type depository: CAB.

Type material examined: holotype ♂ (CAB, Fig. 75), République du Congo, Parc Nat. d'Odzala, Mboko, riv. Lango, 21.VIII.2002, leg. AB.

Additional material examined: Centrafrican Republic: Mambere-Kadei, Carnot-Gadzi road, 15 km E. Carnot, 600 m, 5-6.VI.2009, A. Kudrna jr., 2 ♀♀ (CAB, Fig.76, CFP).

Colour pattern of the upper side: head brown-testaceous; pronotum and ground colour of elytra piceous; elytral marks testaceous arranged as in group C.

Size: holotype L 2.70, w 1.50, L/w 1.80, Lmst/L 0.19, Lp 0.53.

Body shape: regularly oval.

Male genitalia: penis with distal part symmetrical and apex rounded, slightly bent rightwards.

Distribution: Republic of Congo, Centrafrican Republic.

Remarks: the two ex ♀♀ designated as paratypes of this species in Bilardo & Rocchi (2010), possibly belong to a different species; at the moment we do not describe that taxon in expectation of a male specimen.

Neptosternus susinii Bilardo & Rocchi, 2010 (Figs. 77-78)

Neptosternus susinii Bilardo & Rocchi, 2010: 38

Type locality: Gabon (National Park of Plateaux Batéké, Camp Ntsa).

Type depository: MSNM.

Type material examined: holotype ♂ (MSNM), Gabon, Parc National des Plateaux Batéké, Camp Ntsa, forêt dense, 8-13.IX.2008, à la lumière, leg. AB; paratypes (same data as holotype): 15 ex (CAB, Figs. 77-78), 9 ex (CSR); 1 ex (CAB), Gabon, Parc National des Plateaux Batéké, Osséré, 4-6.IX.2008, à la lumière, leg. AB.

Colour pattern of the upper side: this species closely resembles *N. batekensis* Bilardo & Rocchi, 2010; head, pronotum and ground colour of elytra pitch-black; in a few specimens pronotum with a narrow median band dark-testaceous; elytral marks testaceous, arranged as in group C but somewhat peculiar (see photo Figs. 77-78); inner and intermediate marks of the median band sometimes missing.

Size: L 2.75-3.04, w 1.51-1.68, L/w 1.76-1.85, Lmst/L 0.19-0.21, Lp 0.54.

Body shape: regularly oval, but more elongated than in *batekensis* and laterally compressed.

Male genitalia: penis with distal part broader that in *batekensis*, and with rounded apex.

Distribution: Gabon.

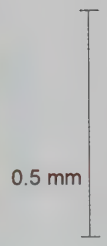
Figs. 3-5 - 3) *N. alluaudi* Régimbart, 1903, lectotypus ♀ (MNHN), Madagascar Centre-Sud: habitus. 4) *N. alluaudi* Régimbart, 1903, ex ♂ (NMP), N. Madagascar, Antseranana distr., Sambirana riv., Marovato: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis dorsal-right lateral view / pene in vista dorsale-destra laterale; e) penis lateral view / pene in vista laterale. 5) *N. silvester* Guignot, 1960 (new synonym), ex ♂ (MNHN), Madagascar, Andobo 190 m, forêt Antsingy: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale.

Figs. 6-8 - 6) *N. fasciatus* Omer-Cooper, 1970, holotypus ♂ (NHML), Nigeria, stream crossing the road from Enugo to Makurdi: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale. 7) *N. fasciatus* Omer-Cooper, 1970, ex ♂ (CAB), Gabon, Franceville, vill. Mopia, riv. Ikengué: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view. 8) *N. fasciatus* Omer-Cooper, 1970, ex ♂ (NMW), Gabon, Makokou: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale.

9a

9b

9c



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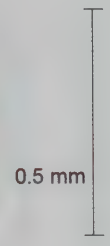

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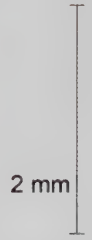
Figs. 9-11 - 9) *N. fasciatus* Omer-Cooper, 1970, ex ♂ (CAB), Gabon, Mandji: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale. 10) *N. fasciatus* Omer-Cooper, 1970, ex ♂ (CAB), Gabon, Kinguélé: á) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale. 11) *N. fasciatus* Omer-Cooper, 1970, ex ♂ (CAB), Gabon, Ntoum: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale.



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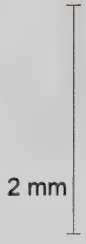

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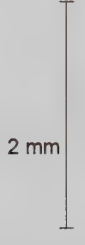

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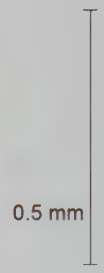
Figs. 12-14 - 12-13) *N. fasciatus* Omer-Cooper, 1970, ex ♂ (CAB), Gabon, Réserve Lopé Okanda: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale. 14) *N. nuperus* Guignot, 1954, ex ♂ (CAB), Cameroun, Kribi: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale.

15a

15b



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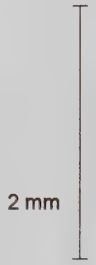

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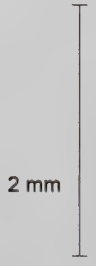

17a

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Figs. 15-17 - 15) *N. nuperus* Guignot, 1954, ex ♂ (CAB), Gabon, Franceville, Mopia, riv. Ikengué: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale. 16-17) *N. nuperus* Guignot, 1954, ex ♂ (CAB), Gabon, Franceville, Mopia, riv. Ikengué: a) habitus, variations of elytral pattern and of body shape / variazioni del disegno elitrale e della forma del corpo (in Fig. 17 elytra more narrowed behind giving the appearance of having been laterally compressed / elitra più stretta posteriormente e che appare compressa lateralmente); b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view/ apice del pene in vista dorsale .

Figs. 18-20 - 18) *N. nuperus* Guignot, 1954, ex ♂ (CAB), Gabon, M.ts Cristal, Asseng Assala: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale. 19) *N. oberthueri oberthueri* Régimbart, 1903, lectotypus (MNHN), Madagascar (S.te Marie): a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale. 20) *N. oberthueri oberthueri* Régimbart, 1903, paralectotypus (MNHN), Madagascar (S.te Marie): a) habitus; b) penis dorsal view and right paramere (inner face) / pene in vista dorsale e paramero destro (faccia interna); c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale.

Figs. 21-25 - 21) *N. oberthueri bilardoi* Pederzani & Rocchi, 2008, paratypus (CSR), Madagascar, Andohahela (Tulear), Isaka: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale. 22-25a) *N. oberthueri bilardoi* Pederzani & Rocchi, 2008, (NMW), Madagascar, Manampatrana Bas. (PO 167), loc. Aff. de la Lantara, Sahanivoraky (Andringitra): habitus, colour variation of pattern / variazione del colore del disegno. 25b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; 25c) apex of penis dorsal view / apice del pene in vista dorsale. 25d) penis lateral view / pene in vista laterale.

Figs. 26-28 - 26) *N. oblongus* Régimbart, 1895, lectotypus (MNHN), Madagascar, Annanarivo, F. Sikora: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale. 27) *N. oblongus* Régimbart, 1895, paralectotypus (MNHN), Madagascar intérieur, Ankarata, F. Sikora: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale. 28) *N. oblongus* Régimbart, 1895, (MNHN), Madagascar, Békily: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale.

29a

29b

29c

29d

30a

30b

30c

30d

31

Figs. 29-31 - 29) *N. ornatus* Sharp, 1882, lectotypus (NHML), Madagascar: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale. 30) *N. ornatus* Sharp, 1882, paralectotypus (NMHN), Zanzibar: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale. 31) *N. rotroui* Pic, 1924 (new synonym), lectotypus ♀ (MNHN), Algeria, Sidi-Bel-Abbès: habitus.

Figs. 32-34 - 32) *N. tropicus* Guignot, 1954 (new synonym), holotypus (MRAC), Democratic Republic of Congo, P.N.U., R. Lufira: a) habitus; b) penis dorsal view and right inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis dorsal-right lateral view / pene in vista dorsale-destra laterale; e) penis lateral view / pene in vista laterale. 33) *N. meridianus* Omer-Cooper, 1970 (new synonym), holotypus (NHML), Transvaal, Vaal River: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis dorsal-right lateral view / pene in vista dorsale-destra laterale e) penis lateral view / pene in vista laterale. 34) *N. nigeriensis* Omer-Cooper, 1970 (new synonym), holotypus (NHML), Nigeria, road to Enugo about 47 miles from Makurdi: a) habitus; b) penis dorsal view and right paramere (inner face) / pene in vista dorsale e paramero destro (faccia interna); c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis dorsal-right lateral view / pene in vista dorsale-destra laterale; e) penis lateral view / pene in vista laterale.

Figs. 35-37 - 35) *N. ornatus* Sharp, 1882, (NHML), Sudan, S. Darfur, Cafindibie: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis dorsal-right lateral view / pene in vista dorsale-destra laterale; e) penis lateral view / pene in vista laterale. 36) *N. ornatus* Sharp, 1882, (MNHN), Senegal, Badi, Parc Nat. du Niokolo Koba: a) habitus; b) penis dorsal view and right paramere (inner face) / pene in vista dorsale e paramero destro (faccia interna); c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale. 37) *N. ornatus* Sharp, 1882, (CFP), Guinea Bissau, 5 km N. de Madina-Salambande: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis dorsal-right lateral view / pene in vista dorsale-destra laterale; e) penis lateral view / pene in vista laterale.

Figs. 38-40 - 38) *N. ornatus* Sharp, 1882, (CAB), Ivory Coast, Divo: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale. 39) *N. ornatus* Sharp, 1882, (CFP), Ivory Coast, Parc Nat. de la Comoé: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis dorsal-right lateral view / pene in vista dorsale-destra laterale; e) penis lateral view / pene in vista laterale. 40) *N. ornatus* Sharp, 1882, (NHML), Nigeria, Ilorin Prov., Ilorin: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale.

Figs. 41-44 - 41) *N. ornatus* Sharp, 1882, (ISNB), Democratic Republic of Congo, Lac Albert, Kasenyi: a) habitus; b) penis dorsal view / pene in vista dorsale; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale. 42) *N. ornatus* Sharp, 1882, (NMHL), Tanzania, Ukiriguru: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis dorsal-right lateral view / pene in vista dorsale-destra laterale; e) penis lateral view / pene in vista laterale. 43-44) *N. pederzanii* Bilardo & Rocchi, 2010, (CAB), People Republic of Congo, env. Lague, fleuve Mpama. 43) holotypus ♂, a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale. 44) paratypus ♂, habitus, colour variation of pattern / variazione del colore del disegno.

Figs. 45-47 - 45) *N. resartus* Guignot, 1954, holotypus ♂ (MRAC), Democratic Republic of Congo, P.N.U., Kaswabilenga: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale. 46) *N. sombuicus* Guignot, 1954, holotypus ♂ (MRAC), Democratic Republic of Congo, P.N.U., R. Lufira pied Mt. Sombwe: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale. 47) *N. psephotus* Guignot, 1955 (new synonym), holotypus ♂ (MRAC), Democratic Republic of Congo, Parc National de la Garamba: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale.

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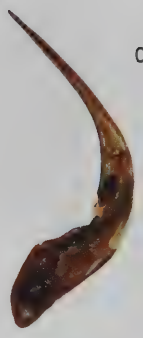

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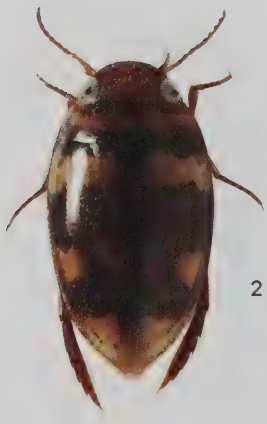
48a 48b 48c 48d

2 mm

0.5 mm

49a 49b 49c 49d



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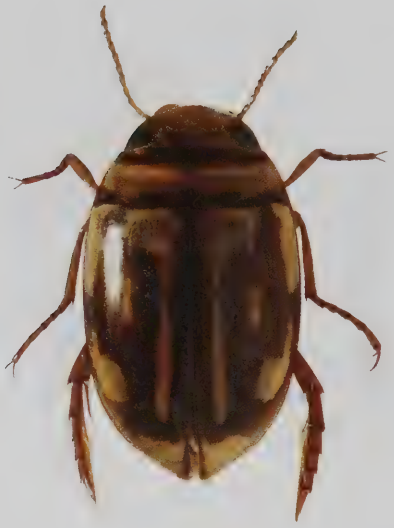
0.5 mm

50a 51 50b 50c

Figs. 48-51 - 48) *N. subopacus* Guignot, 1956, holotypus ♂ (MRAC), Democratic Republic of Congo, Equateur, Bokuma: a) habitus; b) penis dorsal view and right paramere (inner face) / pene in vista dorsale e paramero destro (faccia interna); c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale. 49) *N. tricuspis* Guignot, 1954, paratypus ♂ (MRAC), Democratic Republic of Congo, P.N.U., R. Lufira pied Mt. Sombwe: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale. 50-51) *N. bartolozzii* n. sp., holotypus ♂ (MSNM), Gabon, M.ts Cristal, Asseng Assala. 50) a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsal. 51) paratypus ♀ (MSNM), habitus.

Figs 52-56 - 52-53) *N. bartolozzii* n. sp., paratypes (CAB), Gabon, Franceville, vill. Mopia, riv. Ikengué, 52) ♂; a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale. 53) ♀ habitus, Gabon, Makokou. 54) *N. africanus* Peschet, 1916, lectotypus ♀ (MNHN), Republic of Congo, Fort-Crampel: habitus. 55) *N. africanus* Peschet, 1916, (MNHN), Sudan Région de Sennar: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale. 56) *N. africanus* Peschet, 1916, (MNHN), Democratic Republic of Congo, P.N.U. Kaswabilenga: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale.



57a 57b 57c

58a 58b 58c 58d

59a 59b

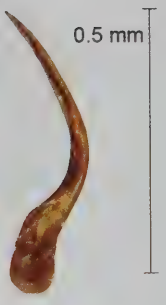
Figs. 57-59 - 57) *N. compsus* Guignot, 1953, holotypus (MRAC), Democratic Republic of Congo, P.N.U. Kaswabilenga: a) habitus; b) penis dorsal view / pene in vista dorsale; c) apex of penis dorsal view / apice del pene in vista dorsale. 58) *N. compsus* Guignot, 1953, paratypus (MRAC), Democratic Republic of Congo, P.N.U. Kaswabilenga: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale. 59) *N. compsus* Guignot, 1953, paratypus (ISNB), Democratic Republic of Congo, P.N.U. Kaswabilenga: a) habitus; b) penis dorsal view and right paramere (inner face) / pene in vista dorsale e paramero destro (faccia interna).

Figs. 60-63 - 60) *N. compsus* Guignot, 1953, (CAB), Central African Republic: a) habitus; b) penis dorsal view; c) apex of penis dorsal view / apice del pene in vista dorsale. 61) *N. distinctus* Omer-Cooper, 1970, holotypus (NHML), Nigeria, R. Assob, nr. Jos: a) habitus; b) penis dorsal view and right paramere (inner face) / pene in vista dorsale e paramero destro (faccia interna); c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale. 62-63) *N. pumicatus* Guignot, 1949, (ISNB) Democratic Republic of Congo, Lusengi. 62) lectotypus ♂, a) habitus; b) penis dorsal view and right paramere (inner face) / pene in vista dorsale e paramero destro (faccia interna); c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale. 63) paralectotypus, habitus, variation of extra, short longitudinal line / variazione della corta linea longitudinale extra.

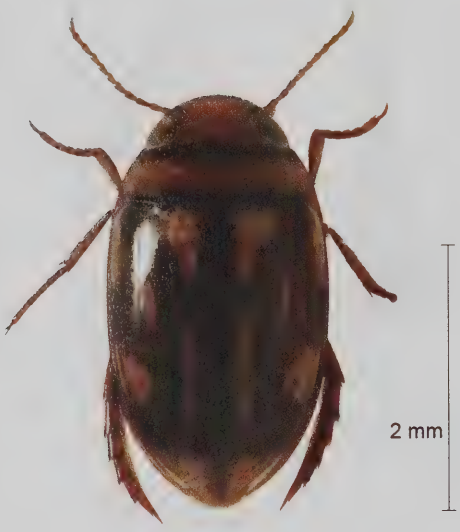
64a

64b

64c



64d



65a

65b

65c

65d

66a

66b

66c

Figs. 64-66 - 64) *N. pumicatus* Guignot, 1949, (CAB), Gabon, M.ts Cristal, Andok Foula: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale. 65) *N. simulator* Omer-Cooper, 1970, paratypus (NHML), Transvaal, Waterberg dist.: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale. 66) *N. simulator* Omer-Cooper, 1970, (CAB), Central African Republic: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale.

Figs. 67-70 - 67) *N. komareki* n. sp. holotypus ♂ (NMW), Benin, Dep. Platuau, Pobé near Crabé: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale; d) penis lateral view / pene in vista laterale. 68) *N. komareki* n. sp. (CAB), Gabon, Parc Nat. M.ts de Cristal: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale. 69) *N. longitarsis* n. sp. holotypus ♂ (CAB), Gabon, Franceville, vill. Mopia: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale. 70) *N. longitarsis* n. sp. paratypus ♀, (CAB), Gabon, Parc. Nat. Plateaux Batéké, Camp Ntsa: habitus.

71c

0.5 mm

2 mm

71a

72

71b

2 mm

0.5 mm

73c

73a

73b

2 mm

0.5 mm

74c

74a

74b

Figs. 71-74 - 71-72) *N. maliensis* n. sp. (NMW), Mali, 100 km W. Sikasso, Bagoé river. 71) holotypus ♂, a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale. 72) paratypus ♀, habitus. 73-74) *N. batekensis* Bilardo & Rocchi, 2010, paratypes (CAB), Gabon, Parc. Nat. Plateaux Batéké, Camp Ntsa: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale.

Figs. 75-78 - 75) *N. langoensis* Bilardo & Rocchi, 2010, holotypus ♂ (CAB), Republic of Congo, Parc Nat. Odzala, Mboko, riv. Lango: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale. 76) *N. langoensis* Bilardo & Rocchi, 2010, ex ♀, (CAB), RCA, Mambere-Kadei, Carnot-Gadzi road, habitus. 77-78) *N. susinii* Bilardo & Rocchi, 2010, paratypes (CAB), Gabon, Parc. Nat. Plateaux Batéké, Camp Ntsa: a) habitus; b) penis dorsal view and inner face of parameres / pene in vista dorsale e faccia interna dei parameri; c) apex of penis dorsal view / apice del pene in vista dorsale.

ECOLOGY

All species of the genus *Neptosternus* have peculiarly long fore and intermediate legs; in particular the intermediate legs have long mesotarsomeres and strong claws to grasp submerged stones and irregularities of the bottom, in rapid streams. The hind legs bear long natatory setae that enable the beetle to effectively swim also in running water. Thanks to such features, *Neptosternus* are particularly fit for running water environments and usually occur in all kinds of streams, either slow flowing brooks, even a few centimetres deep, or in major torrents. According to our collecting experience in western and central Africa, *Neptosternus* prefer streams with gravelly bottom or coarse sand, with or without submerged vegetation, either in habitats exposed to sunlight or in shadowy forests; they are particularly abundant downstream minor waterfalls, among semi-submerged stones, even at the middle of the stream. In forest brooklets with muddy bottom or with decaying leaves, they are extremely rare, as well as in the calm puddles at riversides; such habitats are, on the contrary, very rich in other diving beetles, principally *Copelatus* spp.

Researches at the banks of large water streams with sandy or muddy bottom rarely yielded *Neptosternus*, but captures by light-traps near the same water streams sometimes yielded several specimens, also belonging to different species. The photos (Figs. 79-93) show some habitats where some species of *Neptosternus* have been collected with the net and localities where hunting at light has been carried out.

The following species of diving beetles were collected at times associated with *Neptosternus* in Gabon:

- shallow, slow running brooks: *Yola darfurensis* Balfour-Browne, 1947, *Yola gabonica* Biström, 1983, *Laccophilus bizonatus* Régimbart, 1895, *Laccophilus desintegratus* Régimbart, 1895;
- sides of streams: *Leiodytes hieroglyphicus* (Régimbart, 1894) and some Hydrophilidae, in one biotope: *Africodytes mopiensis* Bilardo & Rocchi, 2010.

No diving beetles other than *Neptosternus* were ever collected from the middle of rapid streams; the only water beetles found in association were Elmidae, that also are well adapted to the rheophilic life, having peculiarly long legs with strong onychia and grasping claws.

Fig. 79 - Republic of Congo, National Park of Odzala, Mboko, Lango river. Collecting locality of *N. langoensis* Bil. & Roc.

Fig. 80 - Gabon, Cristal Mounts, Asseng Assala, Sanga river. Disturbed secondary forest, sun exposed, collecting locality of *N. nuperus* Guignot and *bartolozzii* n. sp., occurring in great number.

Fig. 81 - Gabon, National Park of Plateaux Batéké, riv. Mbi. Gallery forest, river bed with sandy ground, collecting locality of *N. batekensis* Bil. & Roc.

Fig. 82 - Gabon, National Park of Plateaux Batéké, small stream in rain forest West of Ntsa camp.

Fig. 83 - Gabon, National Park of Plateaux Batéké, small stream bed with sandy ground, East of Ntsa camp, near mouth in Mpassa river.

Fig. 84 - Gabon, National Park of Plateaux Batéké, Mpassa river. East of Ntsa camp, near place of hunting at light.

Fig. 85 - Gabon, National Park of Plateaux Batéké, Mpassa river. *Mecistops catafractus* on sandbank.

Fig. 86 - Gabon, Mopia, riv. Ikengué. Gallery forest, rocky/gravelly ground, with dense mats of submerged vegetation, collecting locality of several species, with plenty of water beetles.

Fig. 87 - Gabon, Mopia, riv. Ikengué. Submerged vegetation: detail of *Anubias* (Araceae) spp.

Fig. 88 - Gabon, Mopia. Rocky stream bed, collecting locality of *N. longitarsis* n. sp.

Fig. 89 - Gabon, National Park of Cristal Mounts, small streams near place of hunting at light. Kinguélé.

Fig. 90 - Gabon, National Park of Cristal Mounts, small river near place of hunting at light. W. of Séni Mount.

Fig. 91 - Gabon, National Park of Cristal Mounts, small river near place of hunting at light. Ngonla Ngonla river.

Fig. 92 - Gabon, flower of *Crinum* emerged from the running water of stream in Fig. 90.

Fig. 93 - Gabon, National Park of Cristal Mounts, hunting at light.

CHECKLIST OF THE AFRICAN SPECIES

Group A
Species with elytral pattern arranged as in Scheme A

Neptosternus alluaudi Régimbart, 1903: Madagascar.
= *Neptosternus silvester* Guignot, 1960 **n. syn.**
Neptosternus fasciatus Omer-Cooper, 1970: Nigeria, Gabon.
Neptosternus hedychrous Guignot, 1955: Madagascar.
Neptosternus nuperus Guignot, 1954: Central Africa.
Neptosternus oberthueri oberthueri Régimbart, 1903: Madagascar.
Neptosternus oberthueri bilardoi Pederzani & Rocchi, 2008 **n. stat.**: Madagascar.
Neptosternus oblongus Régimbart, 1895: Madagascar.
Neptosternus ornatus Sharp, 1882: Western, central and southern Africa, Madagascar.
= *Laccophilus rotroui* Pic, 1924: 21 **n. syn**.
= *Neptosternus tropicus* Guignot, 1954 **n. syn.**
= *Neptosternus meridianus* Omer-Cooper, 1970 **n. syn.**
= *Neptosternus nigeriensis* Omer-Cooper, 1970 **n. syn.**
Neptosternus pederzanii Bilardo & Rocchi, 2010: Republic of Congo, Angola.
Neptosternus resartus Guignot, 1954: Democratic Republic of Congo.
Neptosternus sombuicus Guignot, 1954: Ethiopia, Democratic Republic of Congo.
= *Neptosternus psephotus* Guignot, 1955 **n. syn.**
Neptosternus subopacus Guignot, 1956: Democratic Republic of Congo.
Neptosternus tricuspis Guignot, 1954: Democratica Republic of Congo, Angola.
Neptosternus bartolozzii **n. sp.**: Gabon.

Group B
Species with elytral pattern arranged as in Scheme B

Neptosternus africanus Peschet, 1916: Western, central and southern Africa.
Neptosternus compsus Guignot, 1953: Central and southern Africa.
Neptosternus distinctus Omer-Cooper, 1970: Nigeria.
Neptosternus pumicatus Guignot, 1949: Western and southern Africa.
Neptosternus simulator Omer-Cooper, 1970: Central and southern Africa.
Neptosternus komareki **n. sp.**: Benin, Gabon.
Neptosternus longitarsis **n. sp.**: Gabon.
Neptosternus maliensis **n. sp.**: Mali.

Group C
Species with elytral pattern arranged as in Scheme C

Neptosternus batekensis Bilardo & Rocchi, 2010: Gabon.
Neptosternus langoensis Bilardo & Rocchi, 2010: Central Africa.
Neptosternus susinii Bilardo & Rocchi, 2010: Gabon.

Acknowledgements

We gratefully acknowledge the Curators of the Museums who kindly sent types and other materials for study, namely Dr. Max Barclay (Natural History Museum, London, UK), Dr. Marc De Mayer (Musée Royal de l'Afrique Centrale, Tervuren, Belgium), Dr. Jiři Hajek (Národní Muzeum, Prague, Czech Republic), Dr. Manfred Jäch (Naturhistorisches Museum, Vienna, Austria), Dr. Pol Limbourg (Institut Royal des Sciences naturelles, Bruxelles, Belgium), Dr. Antoine Mantilleri (Muséum national d'Histoire naturelle, Paris, France), and Miss Christine E. Taylor (Natural History Museum, London, UK).

We thank for their kindly collaboration Dr. Anna Alessandrello, Michela Mura and particularly Dr. Carlo Pesarini (Museo Civico di Storia Naturale, Milan, Italy).

We wish to thank also Dr. Luca Bartolozzi, Chief of the Zoology Section of the Natural History Museum "La Specola" of the University of Florence (Italy) for his valuable suggestions and cooperation in the enforcement of the International Code of Zoological Nomenclature, and in obtaining loans from Museums.

Special thanks are due to our friend Dr. Fernando Pederzani (Ravenna, Italy), specialist of Dytiscidae, for the loan of his entire collection of *Neptosternus*, the valuable suggestions and the linguistic help in preparing the English draft of this paper.

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Armando Bilardo
Via De Amicis 29, 21012 Cassano Magnago (VA), Italia.
e-mail: armandobilardo@libero.it
Saverio Rocchi
Museo di Storia Naturale dell'Università degli Studi di Firenze, Sezione di Zoologia "La Specola", Via Romana 17, 50125 Firenze, Italia.
e-mail: rocchisaverio@yahoo.it

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Pubblicazione disponibile al cambio